



**COLLEGE OF ARTS AND SOCIAL
SCIENCES
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(CCM)**

**IMPACT OF INFORMATION SHARING ON THE EFFICIENCY OF
PUBLIC EMERGENCY SERVICES:
CASE OF MINISTRY OF HEALTH AND RWANDA NATIONAL
POLICE**

This dissertation is submitted in partial fulfilment of the requirement for the award of a Masters' Degree of Arts in Peace Studies and Conflict Transformation.

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Declaration

I, Elie MBERABAGABO do hereby declare that this study entitles “” is my original study work and has never ben submitted for any academic award to any university or higher learning Institution. Nevertheless, the material used for other scholars and publications are acknowledged as indicated in references and bibliography.

Signature Date...../...../2019

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Dedication

Dedicated to Rwandan Emergency Call Centre Operators, who always endeavour to stay sober despite the burnout and abuse, but still deliver with integrity.

Acknowledgement

I would like to extend my sincere gratitude and consideration to all those who supported me directly or indirectly in carrying out this research project.

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Abstract

This dissertation presents a consistent problem of high volume prank calls, which constrain effective delivery of emergency services. The problem has led to the examination of the level of public awareness of emergency services, the level of preparedness of emergency services in ensuring information sharing is well achieved and strategies in place to address the problem.

Fundamental issues examined in the dissertation are: 1) knowledge and use of emergency and non-emergency numbers by member of the public, 2) understanding the need for assistance, 3) quality engagement between callers and operators and, 4) the level of public trust and confidence in emergency services.

The second issue examined is on preparedness where issues like: 1) response time, 2) state of call center abuse and measures to solve the challenge, 3) sharing of electronic information among stakeholders, and 4) agency collaboration among others.

Analysis was made from unstructured interviews conducted with experienced persons in call center operations and others with expertise in Information and communication Technologies (ICTs). The methodology used a qualitative approach where document analysis, interviews, questionnaires and observation were used as data collection methods and a descriptive and analytic approach was used.

The findings from this study shall be useful and necessary for establishing laws and regulations for emergency services, which shall serve to ensure increased responsibility and accountability by users, and help influence standards which have to be met by telecom companies to enable modernizing emergency call centers, which include support for location based services, supporting multimedia and mobile applications for emergency reporting e.g., text based messages, pictures, video and audio among others.

The key requirements for having effective emergency services were also highlighted. The key recommendations made include improving public awareness through public awareness campaigns, establishing a national emergency services coordination mechanism to include formally other actors like volunteers in the health domain, public safety and local leadership who at the village level make a formidable force which can as well support response to emergencies. An emergency services academy has also been proposed to address the challenge of lack of skills in emergency services.

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List of abbreviations

CCM:	Centre for Conflict Management
CoK:	City of Kigali
CRM:	Customer Relationship Management
EMS:	Emergency Medical Services
GIS:	Geographical Information Systems
GoR:	Government of Rwanda
GTI:	Global Terrorism Index
ICT:	Information and Communication Technology
IP:	Internet Protocol
NIDA:	National ID Agency
MOH:	Ministry of Health
PHECS:	Pre-hospital Emergency Care Service
RCHIS:	Rwanda Community Health Information System
RNP:	Rwanda National Police
SAMU:	Service D’Aide Médicale d’Urgence (Emergency Medical Services)
SRMP:	Smart Rwanda Master Plan (SRMP)
SOP:	Standard Operating Procedures
UR:	University of Rwanda
USA:	United States of America
WHO:	World Health Organization

CHAPTER ONE: INTRODUCTION

1.0 General Introduction

This chapter presents background information necessary to the understanding of why the research study was undertaken, presents the research problem and objectives, scope and the importance of the study. Also included in the introduction is how the dissertation is organized in order to provide a road map for guiding the reader.

1.1 Background of the study

The Rwandan Constitution (2003), Article 171 item N^o 4, delegates the function of providing urgent humanitarian assistance in case of disasters, calamities and accidents to Rwanda National Police, while the Rwanda Health Policy (2015, Pg.11) references Pre-hospital Emergency Care Service (PHECS/SAMU) as the entity dealing with emergencies, fully operational in all districts with 213 ambulances (a minimum of five ambulances in each district) and a call centre managing the flow.

The National Disaster Risk Management Plan (2013) presents Rwanda's disaster profile as:

“Dominated by droughts, fire, floods, earthquakes, landslides, heavy rain with strong winds, lightning and thunderstorms, traffic accidents, diseases and epidemics that disrupt people's lives and livelihoods, destroy the infrastructure and interrupt economic activities and retard development”.

Emergency services notably under the Ministry of Health and Rwanda National Police play an active role in dealing with the risks to ensure public health and safety.

Regardless of how information is shared whenever any emergency incident occurs, it has to be noted that a member of public has to at least call/inform emergency services seeking help. Such information shared leads the operator/dispatcher to ask the caller the type of incident and associated details like location, time incident occurred or details about a health/safety-related issue, etc. Information sharing also occurs when there is need to talk within the agency or when the emergency responders (police and ambulance) need to talk between each other. Another way of sharing information may occur when a call made to

the emergency services introduces identity information obtained through accessing the population database in the National Identity Database.

To be able to share information between members of the public and the emergency services for example, the police emergency number '112' and other related emergency and non-emergency toll free numbers (RNP Website Homepage) are managed from the police emergency call centre, and ambulance services emergency number '912' (MOH Website), which is managed by 'SAMU' are the contact numbers used for the services. In fact, based on preliminary research, the police and ambulance contact numbers are sometimes used synonymously.

The need for the members of the public to access emergency services is mainly related to accidents, crimes that pose risks to life, fire and rescue, and other health related issues. The emergency services are so vital to public safety as they help address risks related to life threatening issues and as such reduce negative consequences which may include high numbers of deaths, injuries, illnesses and disabilities that may, when not well dealt with, may present long term negative political and socio-economic concerns.

While the quality of service regarding the response time to emergencies has been clearly stated in the Rwanda National Police Service Charter (RNP website), it is important to examine whether the stated standards are appropriately met, whether the public are fully aware of the services, and to identify whether there exists any key challenges related to information sharing in improving efficiency of the emergency services, or whether there are any strategies to address the challenges. This task equally applies to the ambulance services.

1.2 Research problem

Basing on the month of November 2018 call statistics, Rwanda National Police received a total of three million, three hundred seventy three thousand, seven hundred and sixty eight calls (3,373,768) calls reached the call centre system, out of which one million three hundred and one thousand eight hundred and twenty six (1,301,826) became answered calls (making it a daily average of forty one thousand nine hundred and ninety four (41,994) calls. The rest of the calls which total to two million, seventy-one thousands nine hundred and forty two (2,071,942) include busy calls, failed calls and unanswered calls.

The big number of calls received by the Rwanda National Police call centre present a very big problem, which needs to be addressed.

The above answered calls are directed to other Rwanda National Police short codes, which are 110 (Maritime), and 112 (Emergency Number) and other short codes for non-emergency issues, which include 113 (traffic police), 3151 (abused by a police officer), 3512 (Gender Based Violence) and 997 (anti-corruption). The separate toll free emergency numbers help to directly address specific calls to responsible desks/call handlers. Despite having both emergency and non-emergency calls in one facility for the police, the number of calls received as seen above present an enormous challenge and draws attention to the existing gaps, which all lead to compromising the quality of service.

Rwanda National Police is dedicated to delivering high quality services to the public it serves, and had through the Police Service Charter (2018) set the emergency response time to 25 minutes, and further RNP Strategic Plan (2013, Pg. 83) aims at reducing the response time to 15 minutes. Based on the current working environment with information sharing bottlenecks, it is necessary to establish ways that can help Rwanda National Police achieve the stated targets.

At the same time, the Ministry of Health deals with emergency services through the Division Manager of Emergency Medical Services (Service d'Aide Medicale d'Urgence – SAMU) is striving to deliver high quality services to the population. According to the Division Manager, Dr. Theophile Dushime (MOH Website), SAMU, which was created in 2007, works as follows:

“The 912-communications centre as a backbone of SAMU emergency interventions connecting SAMU teams to communities seeking emergency medical support. The 912-communications centre operations are said to range from receiving calls and dispatching field emergency medical teams to providing health information and guidance to those who are not necessarily requesting ambulance services.”

However, the first and most serious problem shared by both emergency call centres are the types of information shared between members of the public and operators, and the huge number of calls that manifest to outright serious emergency call centre abuse. The

kind of messages, which are not at all related to police work or medical emergencies, and which are not objective in nature, exert a huge amount of pressure on operators, is time consuming, and encroaches on the resources that would otherwise be used by genuine callers. It has to be noted that call centre abuse is currently not prosecuted, as there is no existing law in this regard. This problem is compounded by the inability of the existing call centre infrastructure to genuinely filter genuine from non-genuine calls.

Second, the RNP emergency call center receives calls that are directed to the ambulance due to lack of knowledge or confusion between the two numbers (112/912) which may be a result of members of the public not being aware of the numbers to call during emergencies which has an impact on response time.

It has to be noted that after all the period the emergency service call centers have been in place, being delivered to the public through ‘112’ and ‘912’ toll free lines, the level of awareness of the emergency services by the general public is not well known, as no known research has been conducted in this regard, which presents a possibility of gaps for improving the quality of services in the emergency response services.

On another note, the level of preparedness by the Rwanda National Police, the Ministry of Health and other key stakeholders in the emergency response is not well known. Despite there being advancements mentioned in the Pre-hospital Emergency Services, the Emergency Medical Services (EMS) strategic plan (2018-2024, P.17) outlines some of the existing weaknesses and threats which are pertinent to the proper functioning of the emergency medical services (EMS).

1.3 Research questions

From the research problem above, the following are the research questions:

RQ 1. What is the level of public awareness regarding emergency services?

RQ 2. What is the level of preparedness within public emergency services with regard to information sharing?

RQ 3. What are the strategies in place to contribute towards emergency services to become more accessible and responsive?

1.4 Research purpose and objectives

The purpose of my study is to understand how information-sharing impacts efficiency in the emergency services.

The following are the research objectives:

RO 1. To examine the level of public awareness regarding emergency services.

RO2. To examine the level of preparedness of public emergency services, with regard to information sharing.

RO3. To identify strategies in place that can contribute to emergency services to become more accessible, and responsive.

1.5 Significance of the study

The study is significant, in that it will contribute to development of my personal knowledge and understanding in the domain of information sharing in emergency services; attempt to highlight some of the required capabilities by the agencies dealing in emergency services; help to establish the level of awareness of emergency services by the general public; and thereby help to establish the level public trust and confidence in emergency services as a result of the quality of services and as well safeguard the government's reputational risk. All the above factors are aimed at improving safety and security of people living in Rwanda.

1.5.1 Domain Knowledge improvement

To elaborate further on the above, the study will help improve my understanding on the impact of information sharing on the efficiency of emergency services, and enable me to contribute to the body of knowledge with regard to emergency services operations in Rwanda. The study shall as well provide an opportunity for me to know how the major challenges related to information sharing can be addressed. Further, the study shall motivate me to conduct further research in the area of information sharing during emergencies.

Second, the study will add necessary knowledge on how to improve information sharing in support of the work of the agencies engaged in emergency services mainly the police, fire and rescue, and ambulance services, in order to achieve improved coordination and collaboration. It is expected that improving the efficiency of emergency services will improve the survival rates of victims for all types of incidents.

Finally, it is expected that the work shall inform strategy and policy with regard which may influence the acquisition of capabilities that can help to improve information sharing between emergency services and the public, between the emergency services themselves

and within the emergency services themselves which can be achieved after assessing the level of preparedness of the emergency services.

1.5.2 Improving Public Awareness of Emergency Services

Third, the study will as well be important to the general public as it will provide recommendations that will improve awareness on especially how emergency services operate and on what is required of the public to improved support. This will help to manage public expectations, and help inform the public on how to best engage the emergency services.

1.5.3 Contribution to Strategy and Policy Recommendations

Additionally, since my research has a potential of coming up with recommendations, it is expected that the work shall inform strategy and policy with regard to acquisition of technical capabilities which can help to improve information sharing between emergency services and the public, between the emergency services themselves and within the agencies charged with managing emergency services. The study shall as well inform policies and procedures with regard to information sharing in public safety and as well address capacity shortfalls within emergency services.

1.5.4 Understanding of Key Requirements

Next, The study shall also provide a good understanding of the appropriate requirements to include in any future projects that are aimed at addressing the challenges in the area, and to contribute directly or indirectly to the efficiency and effectiveness of emergency services. Such requirements may be highlighted among the recommendations.

1.5.5 General Contribution to the Public

Finally, the study will contribute to improving public health and safety Rwandans and will contribute to making Rwanda safer.

1.6 Scope of the study

The scope shall consider all types of emergencies starting from small everyday accidents, emergency health related issues to disasters, geographically covering Kigali city and targeting both sectors where we have roads are already marked and those other sectors where there are no marked roads in the districts of Gasabo, Kicukiro and Nyarugenge.

The first reason why I chose the city of Kigali is that this is where I currently live and is the place where I had a good working experience before joining the course, which in my opinion presents an opportunity for me to be easily facilitated to access information necessary for the study. The other reason is that both the Rwanda National Police Emergency Call Centers and the Ministry of Health Emergency Medical Services (SAMU) are situated in the City of Kigali.

The research period covers three months starting from December 2018 to February 2019, where enough information has been obtained to achieve good results.

Finally, the study has looked into challenges related to information sharing which have touched the gathering of emergency information from the public, coordination and collaboration between agencies responsible for emergency services, noting that emergencies considered in the study start from small everyday accidents to disasters. The challenges have pointed to recommendations, which will help to address the indicated challenges.

1.7 Research Design

The research design takes the qualitative research approach which, basing on knowledge from Bryman (2012, P.36) addresses my interest on gaining an understanding of why there is a huge volume of calls (prank) to the emergency call centres, with an attempt to interpret the reasons why this happens and/or is not under control, and subsequently identifying what strategies are in place to address the situation.

The data collection method for the research includes document reviews, questionnaires, unstructured interviews and narratives from both users of emergency services, managers and operators in the emergency call centres, and also observation on what goes on in the call centres during work.

To analyse data, coding is used to help in the review of transcripts and field notes so as to enable to clearly package component parts that are of theoretical significance to the research which components are reflected in the research objectives.

1.8 Structure of the study

The research study is arranged into five chapters, which are arranged and described as follows:

Chapter one presents the background of the study, the context in which the research took place and shows the importance of the study, the key actors in the study and presents the key variables that shall support the reader to become aware of the topic. The chapter also presents why the research was carried out also presents the research objectives and the research questions.

Chapter two is the literature review, which shows what others have published that is relevant to the research topic much of which shall act as a basis for a better understanding of the context in which the research is conducted. The chapter will also contain a critical analysis of the concepts, which will help to form an evaluation on the research topic.

Chapter three shall re-state the research objectives to enable the reader to make an assessment as to the validity of the research project. The chapter shall also explain to the reader the process by which the research questions, which were derived by an analysis of the relevant literature, were answered. The chapter also provides the rationale for using the research methods and techniques used and why others were not used for the particular situations.

Chapter four presents the key findings that address the research design and objectives, which will be done through presentation and analysis of the data obtained.

The final chapter on will attempt to show how the research questions have been addressed and make recommendations based on the research objectives. Since the study does not exhaustive cover all the presented ideas, the further required research shall be as well presented under this chapter.

1.9 Chapter Summary

The introduction has set out the background for the research study and has presented the context in which the research took place, and has mentioned the importance of the research, a statement of aims and objectives that the thesis is going to address. The chapter also presents the reasons why the study was carried out and how the dissertation is organized in order to guide the reader on the work.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

Chapter two of the thesis provides information relevant to the understanding of the research from work done by others in the area. To achieve this, the chapter covers the definition of key concepts which are relevant to information sharing in public emergency services, pointing to the need for public awareness of emergency services and how they have to relate; the need for quality emergency services, key requirements to achieve effective emergency response and the information sharing opportunities for emergency services in Rwanda are presented among others.

2.1 Definition of key concepts

To clearly understand what is being discussed under this research, it is essential to give some explanation on the key concepts, which are presented with some analysis on what role these concepts play in this specific research. The concepts defined include emergency services, information sharing, enterprise information systems, situational awareness and efficiency, which are defined as seen below. All the key concepts are lead to a better understanding of the research objectives.

2.1.1 Emergency Services

According to Fredholm (2010, P.12), the word emergency applies to the whole spectrum of unforeseen occurrences from minor incidents and accidents, up to major incidents and serious emergencies, then on to periods of serious crisis that, for example, affect essential public services, and also disasters both man-made and natural.

Emergency services are accordingly the core organizations that respond to events which pose a threat to the safety of people and property, and the emergency call centres are usually the first receivers of information of incidents and events from the public. In the Rwandan context, these include the Rwanda National Police (including fire and rescue services) and the Ministry of Health (SAMU/Ambulance).

2.1.2 Information sharing

According to Conklin (2008, P.3), information sharing is the legitimate and purposeful sharing of specific information by design between two parties where purposeful indicates

that both parties have a legitimate reason for the exchange, for the giving party to agree to the sharing, there must be some aspect of exchange in return.

This exchange is said to come in the form of enabling action, where the sharing of information enables the other party to do something. Citing (Reylea et al. 2005), Conklin shows how Information sharing can be broken into two main components, one being technical and the other being policy oriented. Both of these components provide answers achieve preparedness of the emergency services.

2.1.3 Enterprise Information Systems

According to Khosrow (2011, P.43), an “Enterprise Information System is a software system that integrates the business processes of organization(s) to improve their functioning“. To give an example of the relevance of information sharing, I take an example of person involved in a road accident who after reaching a health facility goes through different departments, which include the Accident and Emergency (sometimes called casualty), and may go through other departments depending on the level of injury like operating theatres and critical care departments. Integration of information about the patient from different departments plays an important role in knowing the end result of the person involved in an emergency.

In this research, an Enterprise Information System platform is necessary to allow for the emergency response to have a common picture about the status of the victim/patient who has been delivered for medical treatment as one of the challenge is the gap seen on the status of victims who have been delivered to hospitals who make it difficult to obtain actual statistics with regard to emergency services especially for those who get a chance to make it to the hospitals.

2.1.4 Situational Awareness

Situational awareness can be described as “the perception of the elements in the environment within a volume of time and space, the comprehension of their meaning and the projection of their status in the near future”. According to Harrald (2007, P.2), situational awareness is important for effective decision-making and performance in any complex and dynamic environment.

According to Bram (2011, P.13) while citing (Lundberg & Asplund, 2011) describes situational awareness as essential for emergency management and as well cites (Lass, Regli, Kaplan, Mitkus & Sim, 2008) to define situational awareness as “the knowledge of

the state and physical location of people, objects and terrain within an area of interest”.Both references above point to how knowledge of the operational environment is necessary for decision-making.

2.1.5 Efficiency

Efficiency is defined as the ability to accomplish something with the least waste of time and effort (dictionary.com) and in this research; efficiency refers to the ability for emergency services to acquire the necessary requirements to support the achievement of their goals. Such factors that contribute to efficiency of emergency services can be seen from the lens of improved incident response time, knowledge of incident location, shortest paths possible to the location, access to accurate information such as victim blood group or medical history, availability of ambulances, emergency beds, operating suites, and specialized doctors among others.

To be able to achieve efficiency in this domain, organizations have to embrace technology where communications and information systems play a big role but where processes and procedures have been defined to ensure that the service quality is achieved.

2.2 Information Sharing During Emergency Response

Understanding the need for preparedness of emergency services in this topic mainly refers to the ability to share information. Globally, information sharing between the public and emergency services is one area that has always required considerable attention and improvement. In this thesis therefore, information sharing looks into sharing information between members of the public and emergency services; between emergency service agencies (inter-agency); and within the agencies (intra-agency) themselves. Information sharing also considers sharing of data stored on different systems belonging to different agencies.

2.2.1 Information Sharing between the public and emergency services

According to Haddow (2011, p. 40), communicating with the public is an area that needs to be improved if the nation is going to have a truly effective homeland security system. Haddow furtherpoints out how communications has become an increasingly critical function during emergency management, further referring to the importance of the ability for emergency services to talk to one another.

In Rwanda, the biggest tool of communication between the public and emergency services is the mobile telephone, which is only through voice.

2.2.2 Information sharing between emergency services

Information sharing is achieved through many different ways and in different forms. Communication is said to be the critical success factor in any emergency response where Molino (2006, p.18) indicates that clear and concise communications at an emergency incident may well make the difference between life and death.

The author emphasizes that in order to facilitate effective communications, a variety of methods are generally applied that include face-to-face discussions, radio, telephone (landline or cellular), and instant messaging systems among others.

2.2.3 Information sharing within the agency

Information sharing within an organization can be done through multiple ways, which includes the use of IT systems to exchange reports, telephones, radio communications, face to face conversations among others.

2.2.4 Information sharing between information systems

Information sharing also occurs between information systems through ensuring use of standards for data content, data exchange, quality control and system availability. Interoperability between systems according to De Walle et al (2010, p.307) is achieved if the information from one system is correctly ingested in another system, preserving meaning and context. The author advises on the easiest way to achieve interoperability through the use of standards for data exchange (allowing other systems to read the data) and data content (allowing other systems to interpret the data).

2.3 The Need for Quality Emergency Services

Quality emergency services can first of all help to achieve quality service delivery in public security and safety, guard public trust and confidence in emergency services and the help in protecting Rwanda's reputational risk. Emergencies can have extensive political, social, economic and health impacts with consequences that can persist even after the emergency has occurred which may mean a lot to public safety and security.

2.3.1 Ability to Deliver Quality Services

The issue of the quality service in emergency services is critical, as failure to provide quality emergency services to citizens has a potential to create an environment where there is likelihood of lack of public trust and confidence in public emergency services, a

factor which can lead to a feeling of lack of security and safety by the general public.

In the Rwandan case, poor quality service delivery by emergency services strongly goes against the grand strategic intent by the Head of State (HE KAGAME, 2015) where Rwanda National Police with the kind of existing professionalism and skill should be able to put Rwandans in a state where they take their security and safety for granted and get what they deserve as stated in the following words:

“Rwandans deserve development, not hunger, bad governance and insecurity. Let us continue to work to deliver the development to our people. Every one of us must play their part. Police has contributed to bringing peace beyond our borders with professionalism. But it should start here. Rwandans must be able to take their security and safety for granted. You have been trained to ensure that this is the case.”

Quality emergency services are one of the necessary requirements that contribute to public security and safety. This is a grand strategic objective “Rwandans being able to take their security and safety for granted” that has to be achieved. The quality of service is stated in the Rwanda National Police in the service charter.

2.3.2 Rwanda’s Growth and Development

The growing need for effective emergency services can be demonstrated by the speed at which Rwanda is developing in the different areas, which include industrialization, tourism and other sectors.

To understand the growth in the industrial sector, reference can be made to Kamarudeen (2013, P.5) in the report on Constraints and Opportunities in Rwanda’s Industrial Sector. The sector indicates how the industrial sector in Rwanda has remained fairly stagnant in the past decade and accounted for 14% of GDP in 2010 with the share of industry in GDP (mining and quarrying, electricity and water and construction).

There are indicative government initiatives of promoting investment through the Rwanda Development Board (RDB). For example, Rwandan Industrial Policy (2010) has goals which include promoting the growth of the economy with the target of becoming a middle-income country by 2020 - requiring GDP growth of at least 8 per cent on average

per annum which are as well stipulated in the Vision 2020 and the Economic Development and Poverty Reduction Strategy 2008-12 (EDPRS). The objectives the goals there are three objectives which are increasing domestic production for local consumption; improving Rwanda's export competitiveness; and creating an enabling environment for Rwanda's industrialization. At present, the growing private sector, and other government projects and programs which are promoting investment in the country are seeing projects like the Kigali Special Economic Zone (SEZ) which is seeing a growing numbers of industries, the modern constructions mushrooming in the country, and the growing capacity for oil storage among others present a serious need to have strong emergency services to respond to any incidents, be it fire, chemical spills and any other health related incidents.

2.3.3 Addressing Public Health Safety Risks

To understand the need for emergency services, the World Health Statistics (WHO, 2018) outlines some indicators among others that are health related deaths, deaths from road traffic injuries, natural disasters, homicide, and mortality due to conflicts.

The World Health Statistics (2018, P.7) indicates that road traffic crashes killed 1.25 million people worldwide in 2013 and injured up to 50 million more. The death rate due to road traffic injuries is said to have been 2.6 times higher in low-income countries (24.1 deaths per 100 000 population) than in high-income countries (9.2 deaths per 100 000 population), despite lower rates of vehicle ownership in low-income countries.

To elaborate giving an example of Rwanda, the report when making comparable estimates (per 100,000 population) puts road mortality rate for 2013 at 32.1 deaths; the average death rate attributed to natural disasters (2012 – 2016) at < 0.1; mortality rate due to homicides (2016) at 5.5; while estimated direct deaths from major conflicts (2012 - 2016) at 0.3.

The Global Terrorism Index (2015) indicates that terrorism since the beginning of the 21st Century has seen over a nine-fold increase in the number of deaths from terrorism, rising from 3,329 in 200 to 32,685 in 2014. All such information shows the importance of emergency services in improving public safety.

To be able to deal with health and safety issues, the WHO (2016) global strategy on human resources for health: Workforce 2030, has an overall goal to improve health, social and economic development outcomes by ensuring universal availability, accessibility, acceptability, coverage and quality of the health workforce through adequate investments to strengthen health systems, and the implementation of effective policies at national, regional and global levels.

The 21st century context for a progressive health workforce agenda recognizes that the health workforce has a vital role in building the resilience of communities and health systems to respond to disasters caused by natural or man-made hazards, as well as related environmental, technological and biological hazards and risks and takes which can have health consequences that are often devastating, including high numbers of deaths, injuries, illnesses and disabilities and takes note of the following:

“ Investment in the health workforce, in improving health service coverage and in emergency and disaster risk management not only builds health resilience and health security, it also reduces health vulnerability and provides the human resources required to prevent, prepare for, respond to, and recover from emergencies. Greater focus is required on the various roles of the entire health workforce in emergencies, for example in planning for staffing requirements (including surge capacity for emergency response), training and protection, involving them in preparedness and response, and measures for adaptation to climate change in the health sector.

”

According to the Emergency Medical Services Strategic Plan (2018 – 2024, Pg.8) Rwanda maintains about 58,000 Community Health workers in the fourteen thousand eight hundred and thirty seven (14,837) villages with 04 members deployed in each village. Including CHW in the national emergency workforce has several advantages among them are members being trainable to deal with emergency health related issues; possess knowledge of the health status of people living in villages.

Rwanda’s preparedness to deal with health related issues could be drawn from the Community Health Strategic plan (2013 – 2018, P.17), the Rwanda Community Health Information System (RCHMIS) was established to gather and collect health information

from the community level. Community Health workers are said to possess mobile phones to facilitate in transmitting information on health emergencies or seek advice for appropriate service. While the World Health Organization in its global strategy on human resources for health wishes to provide the human resources required to prevent, prepare for, respond to, and recover from emergencies, it is important that Rwanda prepares the CHWs to deal with emergencies by providing the appropriate training to these Community Health workers. In issue No. 3 of the Health Publication sector (2013, P.22) reports one ‘GodanceKantwaza’ a Community Health Worker in Kinazi Sector mentions of her ability to handle some health emergencies like pneumonia where she handles a patient before being transferred to Kinazi Health Center. Such an example shows that CHWs in Rwanda have an active role in saving lives.

2.4 Requirements for Effective Emergency Services

Below are key requirements necessary to enable emergency services to stage an effective response which in this research focuses on an informed population with a culture of supporting emergency services, a skilled human resource in the emergency services, an underlying supporting technical infrastructure, an appropriate organisational structure, laws and regulations governing emergency services which are elaborated further below.

2.4.1 Skilled Emergency Services Human Resource

One important requirement for effective information sharing between the public and emergency services is ‘professionalism’ of the call handlers, which requires specialized knowledge and competence.

According to the Association of Chief Police Officers (ACPO), National Call Handling standards (2004, P.217) best practices which include investigation and data entry, positive service offering and good customer service are key to effective emergency services.

From the point of receiving information from the public, emergency call handlers are expected to project a professional image through their conduct, appearance and attitude. According to the Association of Chiefs of Police Organization, “every employee is an ambassador for the service and every interaction with the public offers the chance to enhance the reputation of Police”.

One additional requirement of the call handlers is that they must possess multiple skills. For example a person working in an Emergency Call Centre must have knowledge and

skills on Basic Life Support so as to know what information to provide to a victim who has a poor health condition.

I learnt a lesson when I visited Elgin Police in the state of Illinois, Chicago city where on the 23 April 2017, and found out that the police officers manning the Call Centre had additional medical related skills which included basic life support skills that helped them to provide health related advice before the arrival of an ambulance.

2.4.2 ICT Infrastructure

Today, Rwanda enjoys increased nationwide coverage of telecommunication networks, and has as well-deployed and high capacity national optic fiber backbone network, covering all districts.

An appropriate underlying technical infrastructure, which has communication tools, which includes radios, can include for example location-based services (LBS), enable better decision making and create a more accountable- efficient and effective government.

a. Location Based Services

Caller Location Identification is one important factor in improving emergency response time. For example according to Abbas (2006, p.177), in 2003, the U.S.

Federal Trade Commission asked that wireless operators provide Automatic Location Identification (ALI) for persons making emergency service calls. The same requirement coupled with mobile subscriber information can facilitate emergency services to establish the identity of the caller and the location.

b. Systems Integration

There are various actors, who are custodians of information that is useful for emergency responders like the personal identity, home address information, digitized medical records, the availability of ambulances that can respond, hospital beds, operating suites, specialized doctors to deal with some cases. Such information is necessary for ensuring that efficiency is achieved and may reside on different databases. The existence of data on separate systems calls for the need for achieving systems integration so that information can be easily available

2.4.3 Laws and regulations

Laws are necessary to provide telecom companies with how to support emergency services with regard to the telecom services. For example, the international dial number (112 and 911) must access emergency services even without sim-card inserted in the phone. The quality of service provided by the telecom companies is done in accordance with the corporate social responsibilities (CSR) that they should provide.

Preparation for laws that suit modern telecommunications services are highly required to be in place as we move forward. According to the European Emergency Number Association report (2018) for example, the European Electronic Communications Code (EECC) will in the next coming year define the way emergencies are handled across the European Union where major topics to be addressed will include public warning, caller location and accessibility for people with disabilities, among others.

Other laws related to responsibilities of the emergency services, and those to punish call center abuse by callers are important to ensure quality service. Laws in Rwanda are necessary to be available as we move into the Next Generation technical infrastructures.

2.6 Existing Opportunities for Emergency Services in Rwanda

The existing opportunities in this respect refer to developments in this area, where in case of Rwanda, the national policy and strategies that focus on science and technology as a key enabler to socioeconomic development offers a great opportunity. Other existing opportunities include the need for improved service delivery in government, which is seeing ICTs play a major role, and the technology and innovation that is being experienced in the public safety sector.

2.6.1 National Strategies, Policies and Plans

The National Strategy for Transformation (NST1) is the 7 Year Government Programme (2017-2024) which aims at accelerating socio-economic and governance transformation. Under this strategy, opportunities for emergency services lay in some of the considerations made for its implementation (Pg. 1) which include adopting and scaling up home-grown solutions based on the Rwanda Culture, values and the country's' unique developmental context.

An example that would to tap from the above strategy, is the big number of volunteers that Rwanda currently enjoys specifically in the health sector, where we have about 58,000 Community Health workers who help address health issues at village level, and

village local leaders for the fourteen thousand eight hundred and thirty seven villages (14,837) would form a formidable force, which with the Rwandan culture of solidarity and good organizational skills would effectively contribute to improved health and safety of Rwandans.

Other plans like the Smart Rwanda Master Plan (2015 – 2020, Pg. 35) in its broadband policy orientation outlines major benefits resulting from improved connectivity which include improved quality and access to healthcare services, which will see the use of advanced medical applications like telemedicine, the management and exchange of patients electronic records across Rwanda, which is one of the key enablers of improved emergency services. The same plan focuses at enhancing government's capability to communicate within government institutions, and with its citizens, which is also at the core of information sharing of emergency services.

The availability of high-speed, reliable and secure broadband will therefore enable the use of distinct technologies in support of information sharing between emergency services. The same plan as well refers to the core objective of 'improving public safety' with focus areas being 'integrated public safety and disaster management systems'.

It has to be noted the critical success factor for the implementation of several projects based on implementation of foundational plans like the NICI II (NICI-2010, P.8) which focused on providing world-class communications infrastructure that would serve as a backbone for future requirements making Rwanda to enjoy nationwide coverage of telecommunications network networks and a high capacity fibre network which deployed up to 30 districts.

2.6.2 Embracing Opportunities in Technology and Innovation

Elsewhere, according to the Police Executive Research Forum (2017, P.5) on the revolution in Emergency Communications, the technology sector is providing new opportunities that bring in a complete revolution in emergency communications where members of the public will be able to share information which includes videos, photographs, and other digital data with emergency call centres, and for these emergency call centres to send these videos and other resources directly to the responding officers, using secure, reliable broadband wireless services. Such an opportunity in the technology

sector has a great potential to succeed in Rwanda as a lot of investment, and related developments are already in place.

Taking a look at some examples, technology is providing the required capabilities for organizations to be able to improve the quality of service in the emergency services domain. Currently, some systems like the Geographic Information Systems (GIS) are said to be critical and important tools that can be used to improve knowledge of what is around you, commonly known as situational awareness. According to Skinner (2010, p.136), GIS can effortlessly provide this situational awareness, which as an important aspect during the management of any incident and can be used to achieve answers such to “location of the incident; number of injuries and the extent of injury; the incident commander; and the deployment of personnel and other resources.

De Walle et al (2010, p.16), further explain how GIS can support group interaction and collaboration during disaster management as follows:

“Emergency Management Information Systems (EMIS) design and technology point to the ability of Geographic Information Systems (GIS) to provide group interaction and collaboration during disaster management activities, by providing geographic information (e.g maps of many different types) and communication tools.”

Such information sharing capabilities that improve collaboration between agencies charged with emergency services and enables responders to access information is a great opportunity that can facilitate information sharing and help emergency services to achieve their objectives of saving lives and property.

For example, it is important to note that through many policy documents, Rwanda has been and is striving to improve the welfare of the population. Vision 2020 (2015, P. 10) aims to improve many areas, which include safety and security, a healthy well-being of its people, and to use science and technology as a cross-cutting tool.

It is important to note however that all in all, technology is offering potential opportunities that help address information sharing challenges and is one area that offers hope to the emergency services.

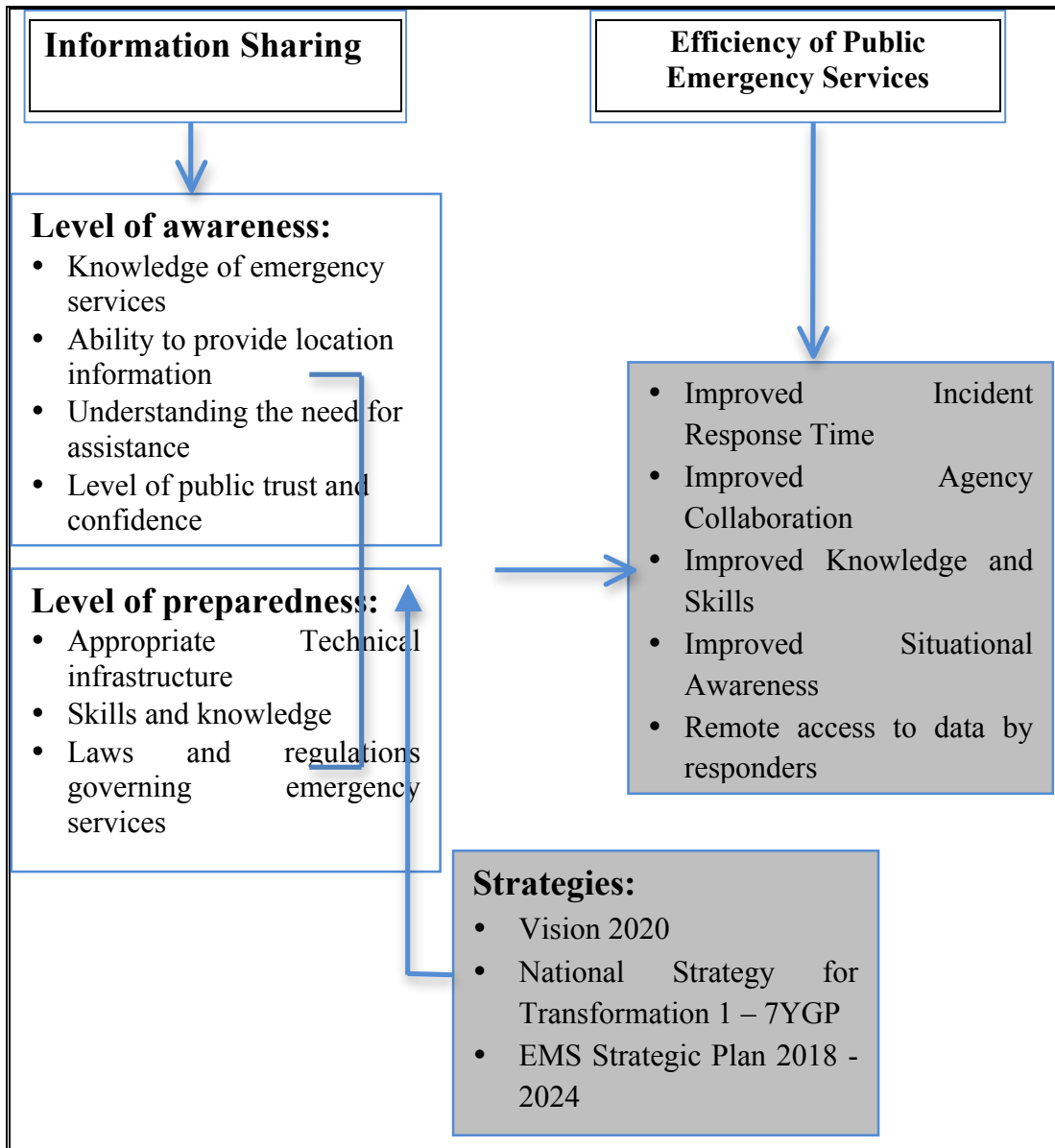
2.8 How to Achieve Effective Information Sharing

Building on what others have researched with regard to emergency services, it is evident that a lot needs to be done to achieve effective information sharing for emergency services. It is noted that information sharing can lead to improved response time, better agency collaboration, and improved situational awareness.

To be able to achieve effective information sharing therefore, it is important to have a good level of public awareness of emergency services with regard to knowledge of what to share in case an emergency on one hand and an appropriate technical infrastructure and necessary knowledge and skills on the other hand. Additionally, there needs to be laws and regulations governing emergency services which may target service providers like telecommunication companies, emergency service personnel and the general public in ensuring service availability. However, for all to be achieved, there has to be the political will and effective strategies.

2.7 Conceptual framework

Below is the conceptual framework, which is built around key variables which are information sharing which is assessed through the level of awareness of emergency services by the general public and the level of preparedness by the emergency services on the one hand and the second variable of efficiency of public emergency services.



Annex A: The Conceptual Framework

Source: Own framework (2019)

2.8 Chapter Summary

The chapter has presented information on the contribution of other researchers in the area of information sharing for emergency services and as well explained information sharing during emergencies, the need for quality emergency services, key requirements for effective emergency services and existing opportunities for emergency services in Rwanda.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

As stated earlier the research objectives for the study are concerned with examining the level of public awareness of emergency services, the level of preparedness within public emergency services with regard to information sharing and the to identify strategies in place that contribute to emergency services to become more accessible and responsive.

The following therefore is the chosen methodology, which will help to gather the right information that will help to achieve the research findings.

3.1 Research design

Research designs are plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Cresswell, 2013, P.3).

3.1.1 Descriptive and Analytic Research

The research design applied in this study is descriptive and analytic where the descriptive research aspect has attempted to provide a detailed picture of the current status of emergency services in Rwanda through an understanding of the level of public awareness of the public regarding emergency services, the level of preparedness of the emergency services with regard to information sharing, and strategies in place that contribute to emergency services to become more accessible and responsive. Analysis has been used for the findings and presented in the thesis.

3.1.2 Qualitative Research Method

To attain my findings, I used the qualitative research method, which included use of surveys to collect information about knowledge of the emergency numbers and non emergency numbers, the time taken to answer calls and respond to incidents, the type of incidents reported to the call centres and the level of public trust of callers in the emergency services. The qualitative approach helped me to get the best from, managers, IT experts in the area, and narratives from operators and respondents from the general public in order to enable me have a better understanding of how emergency services operate.

3.2 Data Collection Methods

According to Matthews (2010, p.181), data collection is a practical activity, one that has to be carried out within time, spatial and resource constraints. The data collection methods used in the study included document review, questionnaires, interviews, narratives and observation.

3.2.1 Document Review:

Several books, articles and journals were used to have a better understanding of emergency services. Documents related to emergency services in Rwanda, policies on health and emergency medical services and strategies were reviewed that helped to establish gaps and challenges related to emergency services, and strategies that can help emergency services to become more accessible and responsive.

3.2.2 Questionnaires:

I deployed three (03) questionnaires, one (01) intended for the members of the public which captured data for related to the level of public awareness on emergency services, and two (02) self-completion questionnaires on preparedness addressed each to police and ambulance Call Centre Managers. I also used the same questionnaire to the division manager of emergency medical services. Strategies and plans about emergency services were discussed with Directors of Information Technology in Police and Ministry of Health.

Information obtained from questionnaires, looked into awareness the awareness of the service by the public; the quality of service, which looked into time taken to respond to incidents both from the police and ambulance beginning from the time a call is initiated from the caller, up to the time taken to reach the incident location. Information therefore included the access time (how long it takes for the police/ambulance to receive a call), time taken during the interview (asking about the problem, providing some advice that may be medical, operational), and dispatching response (response by police or ambulance).

To achieve better results, I personally administered the questionnaires for about 90% of the respondents in order to ensure that respondents easily gain clarity through the guidance and support.

3.2.3 Interviews:

I conducted unstructured interviews with experts in the field of IT and communications, as well as those with knowledge on the operations of emergency services and experience in the field of emergency services.

My respondents included the Director for the call centre for Rwanda National Police, Head of Division of Emergency Medical Services (MoH), SAMU Call Centre Manager, RNP emergency call centre (112) and medical emergency call centre (912) dispatchers. To make my interview successful, I had pre-conceived topics to discuss that I kept to myself.

Those with knowledge and experience in the field of IT mostly provided information on how we can achieve information that can support emergency services like identity information, home address/location information, and medical records.

3.2.4 Narratives:

I also made use of narratives especially with regard to the stories of what happened during the management of a particular public safety incident. Focus was on facts related to where information sharing proved to be a barrier to achieving efficiency. The particular incidents were drawn from records of incidents that have been received and dispatched by the emergency call centre (112).

3.2.5 Observation:

I managed to work with the RNP call centre operators and observed how serious the problem of call centre abuse has become. During the two hours I spent, I noticed the frustration caused by callers who had irrelevant messages for the operators and noticed how this can greatly cripple the quality of services.

3.3 Research population:

During my research, I consulted a total number of 02 respondents from Rwanda National Police, 02 from the Emergency Medical Services, and 02 IT Engineers in the field of IT security in the Rwanda Information Security Authority (RISA). I also conducted a survey using a questionnaire for 100 respondents from members of public.

3.4 Limitations and Mitigation

The first limitation was during the planning stage of my literature review where it was hard for me to define the boundaries of my topic with regard to how I would be able to gather data to address my research topic. Expert knowledge from my supervisor helped me to quickly come up with research objectives that would yield the required data.

The second limitation during my research was lack of sufficient literature on the topic especially by researchers from Rwanda. To address this challenge, I undertook to reading extensively on the topic by looking at emergency management to draw useful ideas.

The third limitation on my research method was the sampling technique used which was convenience sampling, which gave limited opportunity to clearly choose on the right audience from those who have accessed emergency services. To address this limitation, I gave my respondents who had never accessed the services enough time to reflect on any other encounters with emergency services either through friends or relatives.

The fourth and final limitation in my research was the limited time and resources as the study I undertook required a bigger number of respondents to allow me draw better conclusions especially on part of the level of public awareness of emergency services. To address this limitation, I had to expand the questionnaire to capture public trust and confidence to have a better understanding of on the level of public awareness of public emergency services.

3.5 Sampling Techniques

The sampling technique used in this research was convenience sampling, which is according to Bryman (2012, P.201), a type of sampling under the non-probability sampling. The reason why I used the technique is that respondents were simply available by virtue of their accessibility which was convenient to me as a researcher for first of all the nature of the topic of my research which would require a large population to yield accurate results and the short period for research available to me. Under this technique, it would not be possible to know what my population sample is representative of, especially for the sample of 100 respondents.

Since my research wanted to cover areas that have marked roads and houses, and also others that are not marked, this was the only sampling method that would help me to easily achieve positive results within the limited time. The data obtained may not allow

definitive findings to be generated, because of the problem of generalization, but the data obtained could provide a springboard for further research.

To make best use of the sampling technique, I found my respondents mainly after community work “Umuganda” in Kicukiro district Nyarugunga and Masaka sectors and KImironko in Gasabo district, and after a church service in Bumbogo sector. I also visited working places in the garages of Nyamirambo and in residential areas in Muhima. I also visited a gym at the Hilltop Hotel in Remera where I was able to talk to different persons. The criteria adopted to make a choice of a respondent during the survey was based on my assumption of a person as appearing responsible.

3.6 Data Analysis

Data analysis has been done after putting data in the categories developed based on the research objectives, which are the level of public awareness, level of preparedness of emergency services and strategies to address any existing challenges.

For questions related to public awareness, an examination of the number of respondents with knowledge of at least one of the toll-free emergency numbers, and/or both emergency toll-free numbers, and/or none of the toll-free emergency numbers was established. Non-emergency numbers were included with an objective of knowing whether any of the respondents had a way of contacting RNP respondents through the toll-free lines. The second examination was done on the “need for assistance” which helped me to understand whether the callers were well aware of whether they had addressed the call for the correct service (police/ambulance) and were well conscious of the purpose of the call. The third examination was done on the level of public trust and confidence derived from whether respondents were really convinced that police/ambulance would provide appropriate response.

To understand more on preparedness examination was done on the time it takes for a call to be received and answered by operators, which answered questions on how engaged or busy the call centre system can be. An examination on whether the callers were treated with respect and the response time to an incident was made, which indicated preparedness for response seen from the time taken for police/ambulance to respond. The review of laws and regulations, which for example may enable call centre abuse to be prosecuted, was examined which pointed to issues in the area.

Analysis was also made through the unstructured interviews on the future of IT systems integration, which focused on finding any gaps.

3.7 Quality Assurance

The quality of this work is assured looking at the active contribution of my supervisor, contribution from my fellow course participants and staff of the command and coordination centre specifically in the call centre.

3.7.1 Supervisors Role

My supervisor facilitated me through the research process by advising me on the feasibility of the topic and further advised me on the best approach to arrive at meaningful conclusions and recommendations regarding emergency services. The supervisor also has as well helped me to adhere to the planned time for the thesis and further helped me to find the useful and relevant reading with regard to my topic. The quality of the thesis is also guaranteed as I used a suitable methodological approach as guided by the supervisor.

3.7.2 Course participant contribution

Regarding contribution from my fellow course participants, I had enough time to discuss my questionnaires before starting the actual survey and had enough time to capture important information relevant to my topic. The discussions not only helped me to have focused questionnaires which were addressed to the public, emergency response personnel and IT but gave me an opportunity to work with people who had similar knowledge and skills representative of my research population.

3.7.3 Contribution from RNP Emergency Call Centre

To ensure quality work, I was able use the observation technique at the police call centre where I was able to see for myself how police officers were experiencing abuse and were being disabled to deliver the desirable quality as a result of caller behaviour.

I was also able to gather experiences from police officers that work in the call centre and having worked there before I came for the college offered me an advantage to understand the situation faster.

3.8 Chapter Summary

This chapter presented the research methodology, which used a qualitative research approach with data collection methods, which helped to establish the public awareness of emergency services, and quality of service.

The data analysis in my view was comprehensive to enable the understanding of how information sharing can be improved looking at the results obtained.

The methodology used contributed to the quality of my research as I received adequate supervision, and contribution from course participants and operators and shift supervisors from the Rwanda National Police emergency call centre.

The data analysis produces answers to the three research objectives whose findings are presented in the following chapter.

CHAPTER FOUR:STUDY FINDINGS ON INFORMATION SHARING OFPUBLIC EMERGENCY SERVICESIN RWANDA

4.0 Introduction

This chapter presents empirical findings obtained from the primary research undertaken. The findings are represented using graphs and the data presented is analyzed and interpreted in light of the research objectives which are examining the level of public awareness regarding emergency services, the level of preparedness of public emergency services with regard to information sharing and to identify challenges and strategies, with a view to making emergency services more accessible, and responsive towards the public.

4.1 Level of public awareness

Assessment of the level of public awareness of public emergency services considered mainly five survey questions, which are awareness of emergency and non-emergency numbers; ability for the public to share location information; the level of public trust and confidence in emergency services, and the understanding of the need for assistance by the respondents. The survey questions are in line with establishing the level of public awareness of public emergency services, which is presented in the following sections.

4.1.1 Awareness of Emergency and Non-Emergency Numbers

A total of 100 respondents were surveyed to establish the level of awareness and some information about preparedness. Survey questions for 68 male and 32 female of different age groups and level of education were conducted. However, gender of the respondents and level of education has not been considered as a factor that can influence my key findings on the level of public awareness in this particular research.

a. Awareness of emergency numbers

Out of 100 questionnaires launched, 78 respondents were aware of “112” for the Police, while 34 respondents were aware of “912” for the Emergency Medical Services (SAMU). Those who were aware of both (112 and 912) were a total of 31 respondents, while 19 of the respondents knew none of the numbers (112 and 912) but were aware that police and ambulance deal with emergencies. One other maritime emergency number was not known to the respondents, which made it not to qualify in my research as an emergency number.

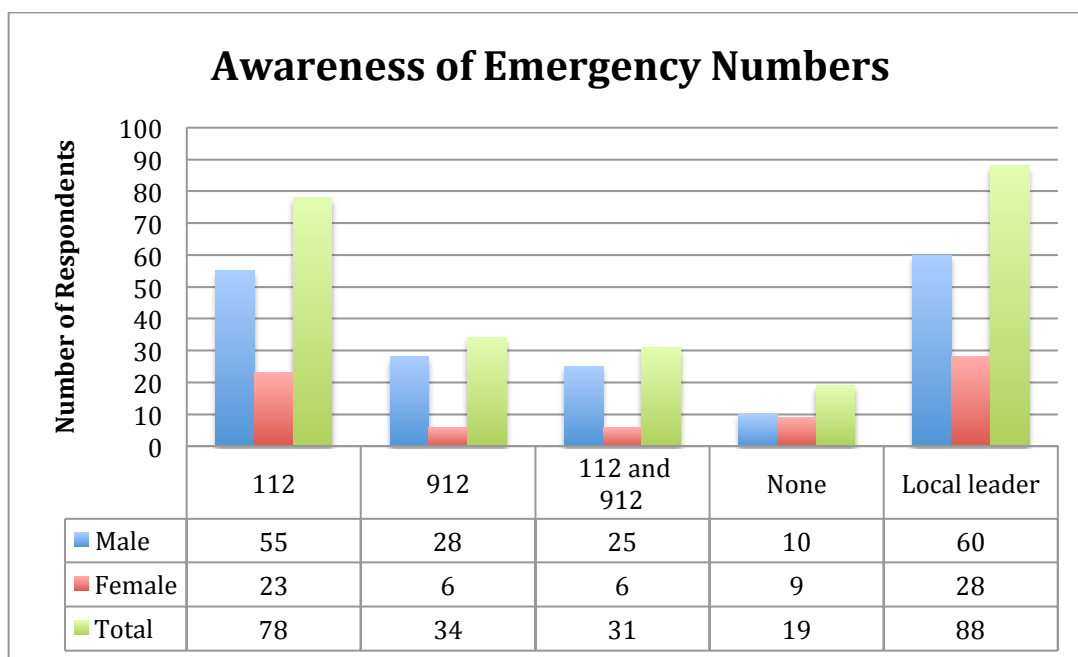


Chart 1. Awareness of Emergency Numbers

Source: Primary Data (2019)

The above information on knowledge on who to call when faced with an emergency reveals other emergency response actors who are in the local leadership (Village Chief and Village Security Chief) and the Community Health Workers. The Community Health Worker was only referred to in the seemingly rural CoK in Bumbogo and Masaka. The local leader scored 88 out of 100 respondents, which was a new finding that had not been anticipated to gain such a score. Awareness for the emergency services was generally above average for both male and female for ‘112 emergency number’ and for ‘local leaders’ with exception of “912 emergency number” which was below average for female. I have no explanation to explain why knowledge of ambulance is below average for female compared to male.

The above findings on the level public awareness indicate that there is a need to improve public awareness of emergency services.

b. Awareness of Non-Emergency Numbers.

One other emergency number maritime issues uses short code (110) while other non-emergency issues related to public safety are (113) for traffic accidents, “116” for (3512) for issues related gender based violence, (3511) when abused by a police officer and (997) when reporting corruption. All the short codes are clearly shown on the RNP

website home page. To my surprise, out of 100 questionnaires launched, none seemed to get any of the numbers except 113, which is known for traffic, which has only known by 06 respondents and 3512 which was known has only 03 out of the 100 interviewed respectively. I think the reason why is that people do not endeavour to remember the numbers as the emergency contact number “112” is easy to remember and may be providing the service. Knowledge of non emergency numbers is as shown below:

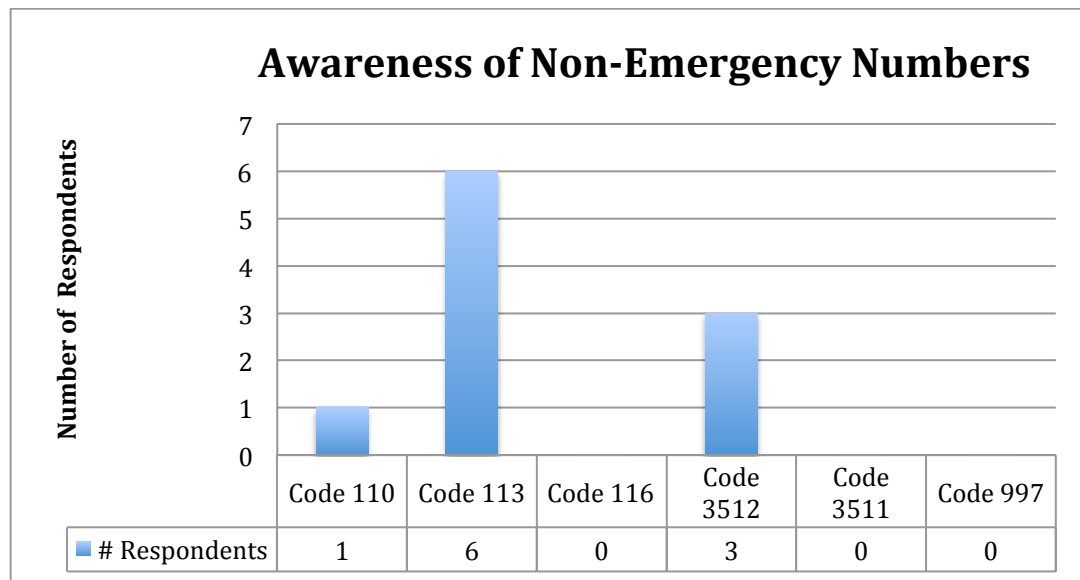


Chart 2. Awareness of non-emergency numbers

Source: Primary Data (2019)

The above information on lack of public awareness of non-emergency numbers points to the possibility of members of the public using emergency numbers for non-emergency issues.

c. Awareness of None of the Emergency Numbers.

During the research, it was also observed that there were some respondents who were not aware of any of the public emergency numbers (112 or 912) who are shown in chart 1 above which shows the number to be 19% of the total number of respondents. The main reason for not knowing any of emergency numbers is that the responders do not anticipate any emergencies that may require police or ambulance. This to me is not a correct assumption by the respondents, as emergencies may occur any time and would rather be attributed to negligence.

Findings regarding awareness of emergency numbers therefore include what is seen below:

- The first finding is that the RNP emergency number (112) is more known as it scored 78% of compared to 34% who were aware of the emergency number for the ambulance. However, there were claims from respondents regarding keeping of many emergency numbers, which may hold some truth as the police emergency call centre receives many requests for ambulance.
- The second finding on 19% of the respondents who do not know any of the emergency numbers but are aware of the numbers for local leaders is an indication of the role of local leaders in emergency services.
- The third and last finding on this item are the actors in the emergency management who include the local leadership and community health workers (CHWs). Although the Community Health worker was not mentioned many times during the survey, the Community Health Workers constitute a presence in the community that can be relied upon for health related issues within the community.

The above findings point to an assumption that the high volume prank calls may not be directly associated with the level of public awareness of emergency services, but rather other factors which may include sheer ignorance.

4.1.2 Ability to provide location information to responders

Knowledge on how to provide location information by callers has been found to be ambiguous as most respondents considered it to have a great impact on the response time. Given responses regarding the sharing of location information between the emergency services and the public, it has been established that there is a lot of difficulty in providing information to responders as many residential areas are yet to have well defined streets and many homes do not have house numbers labelled. The only convenient way presented by most responders was by district, sector, cell, and village, which is not very convenient for dispatch purposes.

4.1.3 Understanding of the Need for Assistance by the Public

The question on understanding the need for assistance was designed to gather information on whether the respondent clearly understood who to share the request for assistance with, and what kind of information to share when reporting an incident.

It was found out that some respondents do not clearly understand the difference between an emergency and a non-emergency incident and may even call police when they have serious disagreements over something that would simply be referred to local leaders. I noticed that respondents feel free to just call any number irrespective of whether it is for police, ambulance or local leaders.

Much as the need for assistance helped me to understand the perception of the respondents with regard to emergency services, it as well helped to show the need for improving public awareness of emergency services.

For example, 03 respondents when responding to the question unveiled how they held a negative myth regarding emergency services response. The myth is negatively biased against the police by portraying police, as always arriving after it is too late to save a situation.

Results on the level of public trust and confidence in the emergence services (see following section) seriously challenge the myth. However, the myth presents a need for effort to improve the level of public awareness to challenge such biases.

The key finding on the need for assistance is that members of the community need to be guided clearly on what and where to address requests for assistance so as to improve the quality of services.

4.1.4 Level of Public Trust and Confidence in Emergency Services

The level of public trust and confidence in emergence services was also used to examine the level of public awareness. Although only 32% out of the respondents accessed emergency services once or multiple times, the remaining 68% were only able to rate emergency services based on others who accessed the services.

a. Access to emergency services

To be able to provide clear results, it is necessary to show the number of respondents who accessed the emergency services for the survey conducted which is shown in the graph below.

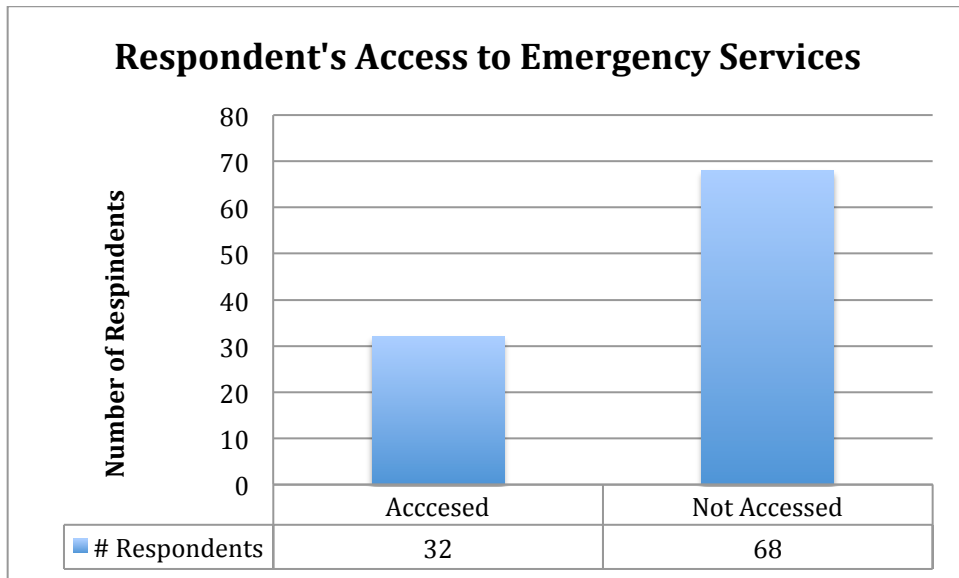


Chart 3. Respondent's Access to Emergency Services

Source: Primary Data(2019).

b. Level of Public Trust and Confidence in Emergency Services

The chart below presents the rating of police (including fire and rescue) and ambulance services. The rating was in the order of 70% and above as (High), 40% - 70% as medium and below 40% regarded as low. The public trust and confidence in emergency services looked at the rating by respondents on how much they believed emergency services can easily be accessed and easily respond, when there is an incident.

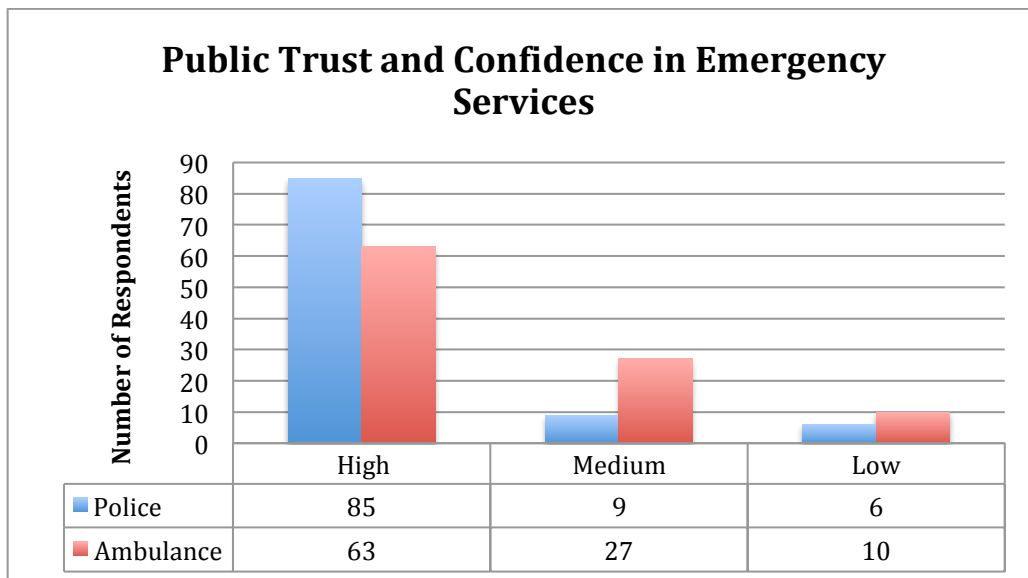


Chart 4. Level of Public Trust and Confidence in Emergency Services

Source: Primary Data (2019)

All the respondents above indicate that the call centre operators when accessible were polite and courteous and listened carefully and attentively and with respect. The poor rating indicated stems from the emergency services either never turning up or transferring them to others who did not provide the service as required, and the operators not making a follow-up on whether they were well served.

Other factors that contributed to the poor ratings include inability by call centre operators to call back on the missed calls, callers' inability to leave voice messages, or send text messages, pictures or video.

One respondent in Muhima Sector, gave a very low rating citing an incident which occurred in 2017, where a member of public lost his life after being injured by a running vehicle at a time of construction of additional lanes of the Muhima – Nyabugogo Tarmac Road. In his own words, the youth lamented as follows:

“Informing police and ambulance and they do not turn resulting into death is a very big failure that requires a big apology. The public should be allowed to contribute to taking the victim to hospital when there are no ambulances. What is funny is that the incident took place in the city centre, which is not far from CHUK hospital. It is a shame”.

In the above example, had the victim been taken to hospital and a follow-up made, I would not expect such comments to have been made. It is therefore necessary to understand the importance of information sharing in achieving good quality service. Lack of information sharing between the public and the emergency services can have consequences like loss of lives and property, which may result from delayed response.

The key finding is that operators need to ensure better engagement with those who make calls, until an incident is closed and to make constant follow-up on customer satisfaction.

4.3 Level of preparedness

The level of preparedness looked at the agencies ability to address challenges related to information sharing during emergency response which includes ability to dealing with high volume prank calls, ability to access information that supports decision making like personal identification, location identification, gaining operational situational awareness, and agency collaboration.

4.3.1 Dealing with High volume Calls

An example taken from Rwanda National Police Call Centre System records for calls made from 10th – 11th February 2019 shows serious challenges, which require to be addressed. Out of a total number of sixty nine, seven hundred and thirty five calls one (69,735) calls received during the 24 hour period, only forty thousands, four hundred and sixteen calls (40,416) were answered. Eighteen thousand, three hundred and ninety (18,390) calls were unanswered; seven thousand five hundred and forty (7,540) calls were registered as system busy; while three thousand, three hundred and seventy five (3,375) calls failed to access the system. It was noted that out of all the forty thousands, four hundred and sixteen (40,416) answered calls, only 49 cases received qualified for response which were dominated by 13 cases of assault and 10 road traffic accidents of as seen on Annex B.

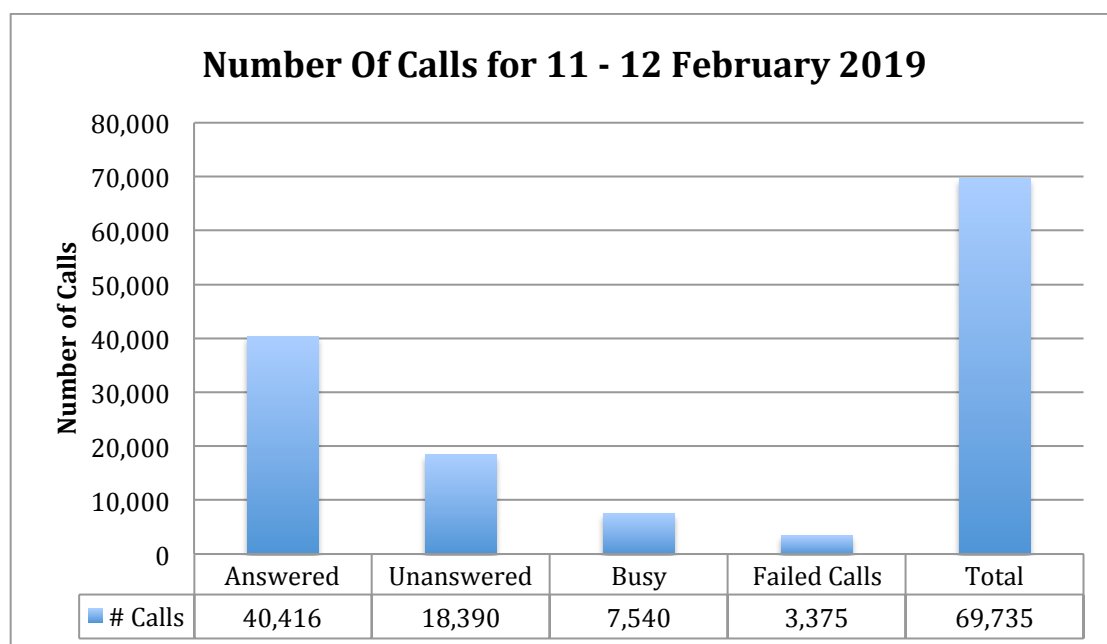


Chart 5. Number of Calls at RNP Call Centre for 11th – 12th February 2019

Source: Primary Data (2019)

According to the RNP Call Centre Director, the biggest challenge in the call centre is excessive abuse, which results from false and unbearable calls from members of the public. The abuse according to the Call Centre Director include those who make calls and opt to say nothing, and others who request for money claiming that they have been told 112 is a number with access to hell. Other calls are people who call operators just to pass

on greetings or request for songs, and others who call to report poor customer care from telecommunication companies, hospitals, local government, banks, etc. a bigger number of callers have issues related to telephone technical issues or others related to balances on their phones. Other cases though not very common include people who call to insult operators. The ambulance Call Centre (912) is not spared from abuse by the callers. According to the SAMUCall Centre Manager, the centre as well receives calls requesting for money, reporting misconduct of drivers, reporting solar power issues and asking for rates for utilities like water and electricity.

The following are some of the findings in this regard:

- The first finding is that the inability to manage high volume call efficiently can be attributed to primarily to the inability of the call center system to possess intelligence to automatically detect repeating offenders.
- The second finding is that dealing with high volume of calls makes it hard, if not impossible to spare time to make follow-up on missed calls and conducting any assessment on the quality of service delivery.
- The third finding is that call center operators are always interacting with a population with a low level of understanding of the call center functions especially kids.
- The last and important finding is that there are no existing laws and regulations to punish offenders who not only deprive opportunity for genuine callers for service

The above findings present challenges related to failure to effectively handle high volume calls and inability to bring offenders in call centre abuse to justice, due to lack of appropriate laws and regulations.

4.3.2 Technical Infrastructure

The survey on the technical infrastructure took into consideration the ability for responders to locate callers/victims, gain situational awareness on the operations being conducted through for example having knowledge on the progress of an incident being managed, improving agency collaboration, countering call centre abuse, and being able to remotely access and share information electronically.

a. Ability to Locate Callers

Both the police and ambulance dispatchers and responders agree to the fact that they all rely on the caller information provided by the caller, as it is not currently possible to automatically access caller location information through the Telecom providers.

This factor leaves the responders (police, fire and ambulance) to rely on finding the location by district, sector, cell, and village and by special structures like churches, markets, bus parks, hotels, etc, and relying on knowledge of the area. For some roads that have been marked in the City of Kigali, there is no tool to facilitate navigation to the locations by responders.

b. Situational Awareness and Agency Collaboration

Situational awareness is simply about the ability for dispatchers and responders to know what is going on around them during operations. Maintaining situational awareness requires collaboration, information sharing, and a unified view of incident information, which requires appropriate tools like GIS and radio communication technology.

The only available tools to contribute to situational awareness during dispatch operations in use were telephones, which are used simply as a tool for communication between the dispatcher and responder. Such a situation limits dispatchers and responders capability to collaborate, locate resources like vehicles and personnel and to listen into conversations of the on-going operation. Improved situational awareness would allow dispatchers to better allocate resources and improve teamwork, performance and accountability.

Collaboration in this context refers to the working together of emergency while dealing with emergencies. Collaboration is highly needed for example for clearing roads during traffic jams, when agencies (police and ambulance) are required to respond together during fire and rescue incidents. In this regard it was found out that there is minimum collaboration mainly due to lack of means communication (radio communication) between police and ambulance and the responders not being co-located which has an impact on the quality of services. For example, I learnt that most emergencies whether fire, traffic accidents or any rescue operation have a medical related component.

It was discovered that the police emergency call centre on “112” and SAMU call centre “912” occasionally receive incidents that are misdirected e.g. call for ambulance made to police, or reporting crimes like assault to the ambulance call centre, which appears to be a result of members of the public not being aware of the correct numbers to call. This not only affects the quality of service delivery, but also places blame on the wrong actors. Putting it in the words of one police call centre operator regarding call transfer: “It really feels very bad to become responsible for another persons work especially when the caller

becomes critical of the quality of service being offered” which shows disappointments registered during service delivery.

c. Access to electronic information During Emergency Response.

A suitable technical infrastructure that contributes to effective emergency services must support access to data. For the police it was also found that information about emergencies is electronically stored in a Customer Relationship Manager (CRM) of the police call centre but is not shared electronically across the institution. The information available about incidents is not captured with sufficient detail that can be utilised by other agencies apart from the Rwanda National Police, which uses it mainly for statistical purposes and assessing the quality of performance of incidents shared with field units.

SAMU Emergency Call Centre on the other hand does not centrally collect details on emergency medical information as much of the work has been decentralised where district hospitals manage ambulance dispatch. Such information about health related emergencies which would be very vital for planning purposes goes unrecorded by the EMS department and therefore becomes a lost opportunity for planning and managing the general performance of the ambulances.

Findings on the above indicate that first, emergency services currently do not have the capability to automatically locate callers/victims, which greatly affects response time. Second, it was found out that there are no appropriate tools to enable dispatchers and responders to easily collaborate, share information across the agencies engaged during incident response and provide the required situational awareness.

The above findings present a challenge to the emergency services related to delayed response time as a result of failure to easily locate callers/victims, failure to understand the operational situational awareness, lack of effective collaboration and a lack of access to information about victims.

4.3.3 Laws and Regulations

It was found out that there exist laws and policies, which refer to emergency services tasking Rwanda National Police, Ministry of Health and Ministry of Emergency management.

For example, the Prime Minister's Instructions N°. 001/03 of 11/07/2014 related to fire prevention in Rwanda, addresses prevention of the outbreak and spread of fire in buildings and other public places; prevention of death or injuries due to fire; regulation of the transportation, storage and use of inflammable materials; prevention of outbreak of wild fires; raise of awareness with regards to fire safety best practices; and increasing fire fighting capacity aiming at protecting people's life and property. The instructions for example however do not have any clause for the building plans to be shared with the fire department for better response during a fire incident.

4.4 Key Challenges

The key challenges to emergency services for both the Rwanda National Police and the Ministry of Health Pre-hospital Emergency Care Service (PHECS/SAMU) are almost similar in nature and derived from the key findings from answers to the research objectives and they include the following:

4.4.1 Inability to deal with high volume prank calls

The first and immediate challenge to both call centres receive a high volume of calls, which are not actually meant for emergency services the cause being mainly an un-informed population who have strong appetite for using phones especially those who are underage. This call centre abuse is a source of poor availability of both emergency call centres.

4.4.2 Lack of appropriate Call Centre Technical Infrastructure

Information sharing currently requires appropriate technical infrastructure, which can enable responders manage calls received, and have capability to minimize the response time through ability to manage callers. As an example, RNP has got a relatively advanced call centre system, which is capable of receiving 30 simultaneous calls from four telecom companies simultaneously with 18 permanent operators serving in four six-hour shifts. The system is configured to optimise call centre operations where the manager is able to

control the quality of service of operators. The system is able to record conversations between the operator and caller for accountability purposes. However, the system has not been designed to integrate with other information systems like the national identity database (NIDA), motor vehicle database, crime database, home address register, etc so as to furnish dispatchers with accurate information that can support decision making and improve performance.

4.4.3 Limited Police/Ambulance Presence

Police response or ambulance becomes delayed due to limited presence, and in the due course, local leaders are engaged to address some issues before the arrival of emergency responders. This comes with its weakness as accountability and responsibility may be compromised during the delivery of services.

4.4.4 Lack of laws governing emergency services

There is a need to have laws governing emergencies that can allot responsibility to different actors and hold accountable those who abuse the services including employees or members of the public who abuse the service.

4.4.5 Lack of Skilled manpower

Both the Rwanda National Police emergency call centre operators and emergency medical services have got limited skills in various types of emergencies, the reason being that even police emergency service operators need to have polyvalent skills that can enable them to address some health related incidents before transferring it to the right persons.

4.5 Existing strategies

The existing strategies that will help address the challenges can be found in the National Strategy for transformation, which is a 7-Year Government programme aimed at accelerating socio-economic and governance transformation which creates opportunities for implementation of and the Emergency Medical Services strategic plan 2018 – 2024 which has earmarked budget for improving the services.

4.6 Chapter Summary

The chapter presented empirical findings obtained from the primary research undertaken from the level of public awareness of emergency services, the preparedness of emergency services and existing strategies that will help in addressing the challenges in the area of emergency services.

The findings show that there is a need to improve the level of public awareness of emergency services and the preparedness of emergency services to ensure quality service delivery. The key challenges mentioned in the chapter serve as a basis for recommendations, which are presented in the following chapter.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The chapter presents a summary of key findings, and a statement on the extent to which the research objectives have been met which is presented under the conclusions. The chapter also presents recommendations derived from the challenges.

5.1 Summary of Key findings

The key findings are grouped under three categories being the level of public awareness, preparedness of emergency services and existing strategies to address challenges in the area of emergency services.

The following are four findings pertaining to the public awareness of emergency services:

- There is a need to improve the level of public awareness of emergency and non-emergency numbers as there still exist a good number of people who do not know emergency service numbers but only rely on the local leaders contacts.
- There are other key players who need to be formally recognized to be part of the emergency services stakeholders and actors who include local leaders and community health workers, which will enable taking emergency services close to the people.
- Members of the public need to be educated on what and where to address their requests for assistance, as operators from police and ambulance on a large note receive issues that are not in their docket.
- The high level of public trust and confidence shows that there is room for improvement in delivering better services to the public.

The following are key findings pertaining to the preparedness of emergency services with regard to information sharing in order to be able to stage an effective response:

- The high volume of prank calls presents a serious challenge to the delivery of quality service and emergency services currently do not have the technical capabilities to comprehensively deal with the challenge.
- The available emergency call center infrastructure supports only voice and needs to be improved, especially the ambulance call center, which still relies on a mobile telephone handset and lacks a software application to manage information.

- On the same note, it has been established that there exists limited collaboration between police and emergency medical services, which can contribute to poor service delivery, as responders do not make use of an existing radio communication system used by Rwanda National Police, taking into account that the services are not co-located.
- It has also been found out that there exist no laws to punish call center abuse.

Finally, the key finding on the strategies with regard to information sharing is that the Government of Rwanda through relevant ministries has put in place technical infrastructures, strategies and policies that can help to easily establish capabilities that can help achieve efficiency in emergency services. Plans also do exist aimed at improving the quality of service of emergency services, particularly the emergency medical services.

5.2 Conclusion

The aim of this study was to examine both the level of public awareness of emergency services and the level of preparedness of emergency services with regard to information sharing, in order to be able to stage an effective response, and as well to identify challenges and existing strategies with a view of making emergency services more accessible, and responsive.

The objectives of the research above have been met as ideas on how to ensure that the general public is made more aware about the emergency services and the key requirements preparedness of emergency services are presented. Some of the challenges related to information sharing, which include limited technical capabilities and lack of laws that would ensure a fair playing field for emergency services have been noted and presented.

Some existing strategies shall be facilitated by what has already been done especially in the field of ICTs where the Government of Rwanda (GoR) is seen to have laid strong foundations, which will enable successful deployment of Information and Communications Technology solutions in various sectors including emergency services. The role to be played by Information and Communication Technology in realizing the efficiency of public emergency services is key, and there exists on the market considerable innovation on solutions for emergency services.

On the same note, there exists opportunities from existing programs like the community health workers (CHWs) with a big number of volunteers who can effectively contribute to the efficiency of emergency services through out the country once organized and facilitated to share information effectively. These human resources simply require organization, and allocating responsibilities, and deploying technology to manage the processes for better coordination and supervision.

The key findings obtained from the research objectives coupled with the challenges noted forms a good number of high level recommendations that need to be followed up to ensure that the research has a contribution in this area that deals with key health and safety issues.

5.3 Recommendations

Based on the key findings and challenges stated above, the 05 following recommendations are being proposed to ensure better and modern Information and Communication Technology systems, a organizational structures and, laws and regulations, that will allow for better information sharing and thereby improve the efficiency of public emergency services.

The recommendations are derived mainly from the chapter on key findings, and challenges observed. The recommendations shall include general recommendations and specific recommendations, which are enclosed in a box as seen below.

5.3.1 Improved level of public awareness of Emergency Services.

Despite the survey results on the level of public awareness emergency services, which indicates that a good proportion of respondents showed awareness, the findings on the high volume of calls addressed to the emergency call centres still show that there is a problem that needs to be addressed.

To deal with the problem of false and unbearable calls and improve the level of awareness of emergency services, which should be known to all citizens, the following specific recommendation is made:

<p>R1: The Ministry of health and Rwanda National Police to jointly conduct Public Awareness Campaigns to improve the level of public awareness of emergency Services.</p>

Rationale: The improvement of the public awareness of emergency services shall ensure that problems are first of all directed to the right persons, where they can receive the required help and thereby improve response time.

Second, public awareness campaigns will ensure that the public is well informed on the important information to share with the emergency services and other issues like correctly directing the responders with information like general area, street names, house numbers, etc.

Third, this recommendation will help reduce the load on the emergency call centre traffic and therefore give opportunity for the call centre to become easily accessible.

Finally, an improved level public awareness will help address the negative myth held by some members of the community, which portrays police as always coming late after an incident has occurred.

5.3.2 Recommendations to the Government of Rwanda

The following four recommendations are addressed to the Government of Rwanda as they may require several stakeholders who include the Ministry of Health, Ministry of Local Government, Ministry of ICT, Ministry of Emergency Management, and Ministry of Education among others. The recommendations are on the establishment of an appropriate technical infrastructure, laws and regulations governing emergency services, establishment of an emergency services coordination mechanism, and the establishment of an emergency services academy.

a. Establishment of an appropriate Technical Infrastructure.

For the emergency services to be able to efficiently operate, it is important that information is shared effectively between the public and emergency services and within the emergency services. Such information sharing shall as well, which require access to various databases for information to support its operations.

Based on the above, the following recommendation is made with regard to technical infrastructure:

R2: To establish a Next Generation Emergency Call Centre that supports integration with other ICT systems in order to access support information for emergency service operations.

Rationale: Technology is changing faster and there is a need to adapt to the changes especially in information and communication technologies (ICTs). There is a fast growth

rate in the use of voice over Internet Protocol (VoIP) based devices and applications that allow users to easily share pictures and videos. It must be noted that currently, Rwandan Emergency Call Centers (112 & 912) do not support the use of text messages, pictures or video in their operations. On the same note, Geographical location based services are increasingly being used to establish a person's position and smart mobile phones from which an emergency call is made can be used to transmit location information which can offer a life saving opportunity.

Additionally, Rwanda has created a strong foundation in the use of ICTs through investments and policies that ensure affordable and accessible broadband connectivity & Infrastructure (broadband as a utility) and further, plans are in place to ensure that all Rwandans have access to broadband connectivity as a basic utility and right. It is further planned that citizens fully adopt and use the Internet in their daily life.

As Rwanda envisions creating sustainable smart cities and villages through three main pillars namely smart governance and planning; smart and efficient service and utility delivery; and localized innovations to achieve social and economic development, there is a need for emergency services not to be left behind.

Some of the functions expected from the above infrastructure is its ability to keep enough data from where intelligence and good statistics to support decision-making. It is also possible interface with other ICT systems to gain information from other information sources which include personal identification (NIDA), medical records and insurance plans, home address, location information found in Geographical Information Systems (GIS) and further provide ability to interface with the radio Communication System for faster dispatch thereby improving efficiency of public emergency services.

The NextGen Emergency Call Centers has a lot of benefits like providing superior quality of information as photos, videos and text messages which can provide a better picture of the environment making responders better informed about the real situation.

b. Effective Community Partnership with Emergency Services

There is a need to tap into the available knowledge, skill and capabilities from the local government, Community Health Workers, Police Youth volunteers, Fire volunteers, and other volunteers e.g. Rwanda Red Cross volunteers. The mentioned human resource is

well placed to contribute immensely to issues related with crime, health and safety issues, which are the major sources of insecurity and emergencies. The following specific recommendation is therefore made:

R3: Establish a National Emergency Services Coordination Mechanism formally structured to include community partners.

Rationale: The current response to incidents mainly from the police on particularly crime incidents involves linking the area District Police Commander (DPC) or station police commander or Station Police Commander to the caller who most of the times liaise with local leaders to handle the reported incident. The call centre agents sometimes make a follow-up on the progress of the reported incident. The current ways of collaboration presents its own limitations and may not be able to ensure accountability and transparency. Establishing a fully fledged coordination mechanism responsible for emergency response, where actors like the local leaders, community health workers are formally required to become part of emergency response will help to achieve the following:

First, the structure will facilitate information sharing and reporting as a result of the actors who have sufficient health and safety information in their Area of Responsibility (AoR). For example, it is obvious that a Community Health Worker at the village level will have sufficient information about the vulnerable groups (elderly, underage, and sickly persons) and their medical history; and for youth volunteers and local leaders it is also obvious that they are better informed about the crime status than any other responders.

Second, the structure will enable to achieve greater control of the process of incident management whether be it an emergency by ensuring centralized control and achieving decentralized and inclusive response.

Third, the structure will promote transparency on how incidents are handled due to the openness achieved through community engagement in case of incidents that are not emergency in nature.

Fourth, the structure will promote responsibility actors during incident/emergency response and may start as a beginning of an audit trail for cases that may require subsequent action like investigation and prosecution.

Fifth, the structure will encourage ownership of emergency services duties by the local communities and help in reducing the blame game and in the process contribute to the culture of responding to emergencies.

Finally, the structure will facilitate a cost-effective way of acquiring technical (Information and Communication Technology) solutions and capabilities, streamline processes, and certainly have joint emergency services.

c. Laws, and Regulations on Emergency Services.

There are several laws and policies that refer to disasters and other emergencies like fire, which include the Prime Minister's instructions (2014) relating to the fire prevention in Rwanda, which addresses fire prevention in public buildings and other public places and covers the transportation of inflammable materials. The instructions as well in (article 34) tasks public institutions, decentralized entities or private institutions to put in place a club of fire fighting volunteers which is very resourceful for emergency services and the placement of the authority responsible for the implementation as the Ministry of Emergency Management.

The National Disaster Management Policy (2012) outlines Rwanda's disaster profile outlines some hazards, which are dealt with on a day-to-day basis by emergency services. The above on laws, policies and regulations compels my research to make the following recommendation.

R4: The Government of Rwanda through responsible offices to establish a law governing Emergency Services.
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Rationale: The emergency services act will bring together different articles together to form a comprehensive document that covers all the required like powers to manage emergencies, offenses and punishments to those who violate the use of ambulance and rescue vehicles, right of way of ambulance and rescue vehicles, and those who make false calls on the emergency dial-in number (112, 912) or any other number that may be dedicated for such a purpose. The act may for example include defining job

responsibilities for the different actors who may include emergency officers, rescuers, and volunteers and to give more responsibilities, which may include training and improving public awareness about emergencies.

d. Skills and Knowledge on Emergency Management

Owing to the number of persons required in the response to emergencies who include the police, health experts and community health workers and other volunteers permitted by the laws, instructions, and ministerial orders, there is an need to create a skilled workforce volunteering involved in life saving activities of public health and safety who would contribute to making our country safer, it is necessary to have an academy, which can promote knowledge, and skill in emergency management that can offer opportunities to contribute to the WHO strategy on “human resourcesfor health:Workforce 2030”

Looking at numbers that would require to receive training given Rwanda being organized in four provinces in addition to the Kigali city, 30 Districts, 416 Sectors, 2,148 Cells and 14,837 Villages, training a workforce that would ensure swift response at village level requiring only 02 trained volunteers would about thirty thousand volunteers to be trained. Given various actors at the village level who include local leaders, security, youth volunteers in crime reporting, community health workers a workforce above one hundred and fifty thousands would require training in basic life support skills, response to fires and floods and others emergencies.

To deal with the big numbers of potential trainees, the academy would offer online course material, which would be supplemented with hands on training upon completion. What is mentioned above calls for the below recommendation:

R5: The Government of Rwanda to establish an Emergency Services Academy.

Rationale: There is need to build emergency preparedness to ensure public health and safety and achieve the mission of Rwandans feeling safe and secure and actively contribute to ensuring that Rwandans take safety and security for granted.

Additionally, such an emergency service academy would offer both short and long courses for members of members of emergency services, volunteers and other public or private organizations in order to equip them with the knowledge of dealing and responding to possible situations relating to prevention and management of emergencies.

Consequently, the certification to those who successfully complete the trainings would

pass life long skills which would create value to the individuals and which would indirectly create opportunities for employment and giving a place in society.

5.4 Recommendation for future work

Since, my research has not established whether call centre abuse is a result lack of public awareness I recommend that further research be conducted on “understanding of factors that contribute to a high volume prank calls from members of the public”.

5.5 Chapter Summary

The chapter has presented a summary of key findings, a conclusion on the topic and five specific recommendations one which is addressed to emergency services and four of which are addressed to the Government of Rwanda due to the nature of having issues that can be addressed by different government ministries and agencies.

Reference List

Abbas, H and Essam D, 2006, *Applications of Information Systems to Homeland Security and Defense*, (Idea Group Publishing, Hershey, US).

Bram, S and Vestergren, S, 2011, *Emergency Response Systems: Concepts, features, evaluation and design*, Report No. 5, Centre for Advanced Research in Emergency Response (CARER), (Linkoping University)

Bryman, A, 2012, *Social Research Methods*, 4th Edition, (Oxford University Press Inc, Newyork, US)

Creswell J.W, 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Third Edition (Sage Publications, London, UK).

De Walle, et al, 2010, *Information Systems for Emergency Management*, (M.E. Sharpe, London, England).

Emergency Medical Services Strategic Plan (2018 – 2024), Republic of Rwanda, Ministry of Health (MOH), 2018

Fredholm, L and Goranson A, 2010, *Emergency Response Management in Today's Complex Society*: (Swedish Civil Contingencies Agency, DanagårdLiTHO, Sweden).

Global Strategy on Human Resource for Health: Workforce 2030, <https://apps.who.int/iris/bitstream/handle/10665/250368/9789241511131-eng.pdf;jsessionid=86052B39EBF6F9B4E12AE129820C97A9?sequence=1>, accessed on 30 May 2019

Global Terrorism Index 2015, <http://economicsandpeace.org/wp-content/uploads/2015/11/Global-Terrorism-Index-2015.pdf>, accessed on 30 May 2019

Haddow, G, D et al, 2011, *Emergency Management: 4th Edition*, (Elsevier Inc, Burlington, US).

Harrald, J and Jefferson Theresa, 2007, *Shared Situational Awareness in Emergency Management Mitigation and Response*, Proceedings of the 40th Hawaii International Conference on System Sciences – 2007.

HE KAGAME, P, 2015 “HE The President of The Republic of Rwanda 2015 Police Cadet Pass - Out Message”, 11 May, viewed 14 November 2018, <http://paulkagame.com/?p=4141>

Information Sharing and Emergency Services: An Examination using Information Security Principles in the Proceedings of the Fourteenth Americas Conference on

Information Systems, Toronto, ON, Canada August 14th- 17th2008, <https://pdfs.semanticscholar.org/456b/17f51ddf9c745b3594c9d30ce9c950532e90.pdf> accessed on 16 April 2019.

Kamarudeen, S, 2013, Constraints and Opportunities in Rwanda's Industrial Sector, Working Document for the International Growth Center (IGC).

Khosrow-Pour, M, 2011, *Enterprise Information Systems: Concepts, Methodologies, Tools and Applications*, (IGI Global, USA).

Mathews, B and Liz, R., 2010, *Research Methods: A practical Guide for the Social sciences*, (Person Longman, and London, UK).

Molino, L, 2006, *Emergency Incident Management Systems: Fundamentals and Applications*, (John Wiley & Sons Inc. New Jersey, US).

National Call Handling Standards http://library.college.police.uk/docs/homeoffice/call_handling_standards.pdf, accessed on 16 May 2019

National Community Health Strategic Plan 2013-2018, http://www.moh.gov.rw/fileadmin/templates/CHD_Docs/CHD-Strategic_plan.pdf, accessed on 09 May 2019

National Industrial Policy, http://www.minicom.gov.rw/fileadmin/minicom_publications/policies/Industrial_Policy-2.pdf, accessed 30 May 2019

National Strategy for Transformation (NST1), http://www.minecofin.gov.rw/fileadmin/user_upload/NST1_7YGP_Final.pdf, accessed on 30 May 2019

Rwanda National Police Strategic Plan 2013 – 2018, http://www.police.gov.rw/uploads/tx_download/RNP_A5_Booklet_FINAL_2015.pdf, Accessed on 09 May 2019

Skinner, R, 2010, *GIS in Hospital and Healthcare Emergency Management*, SCRC Press Taylor & Francis Group.

SMART Rwanda Master Plan 2015 - 2020, http://www.minecofin.gov.rw/fileadmin/templates/documents/sector_strategic_plan/ICT_SSP__SMART_Rwanda_Master_Plan_.pdf, accessed 16 April 2019

The Revolution in Emergency Communications,
<https://www.policeforum.org/assets/EmergencyCommunications.pdf>, accessed on 30 May
23 May 2019

Vision 2020,
http://www.minecofin.gov.rw/fileadmin/templates/documents/NDPR/Vision_2020_.pdf
accessed on 16 April 2019

World Health Statistics: 2018, Monitoring Health for the SDGs, ISBN 978-92-4-156558-
5, <https://apps.who.int/iris/bitstream/handle/10665/272596/9789241565585-eng.pdf>,
accessed 30 May 2019

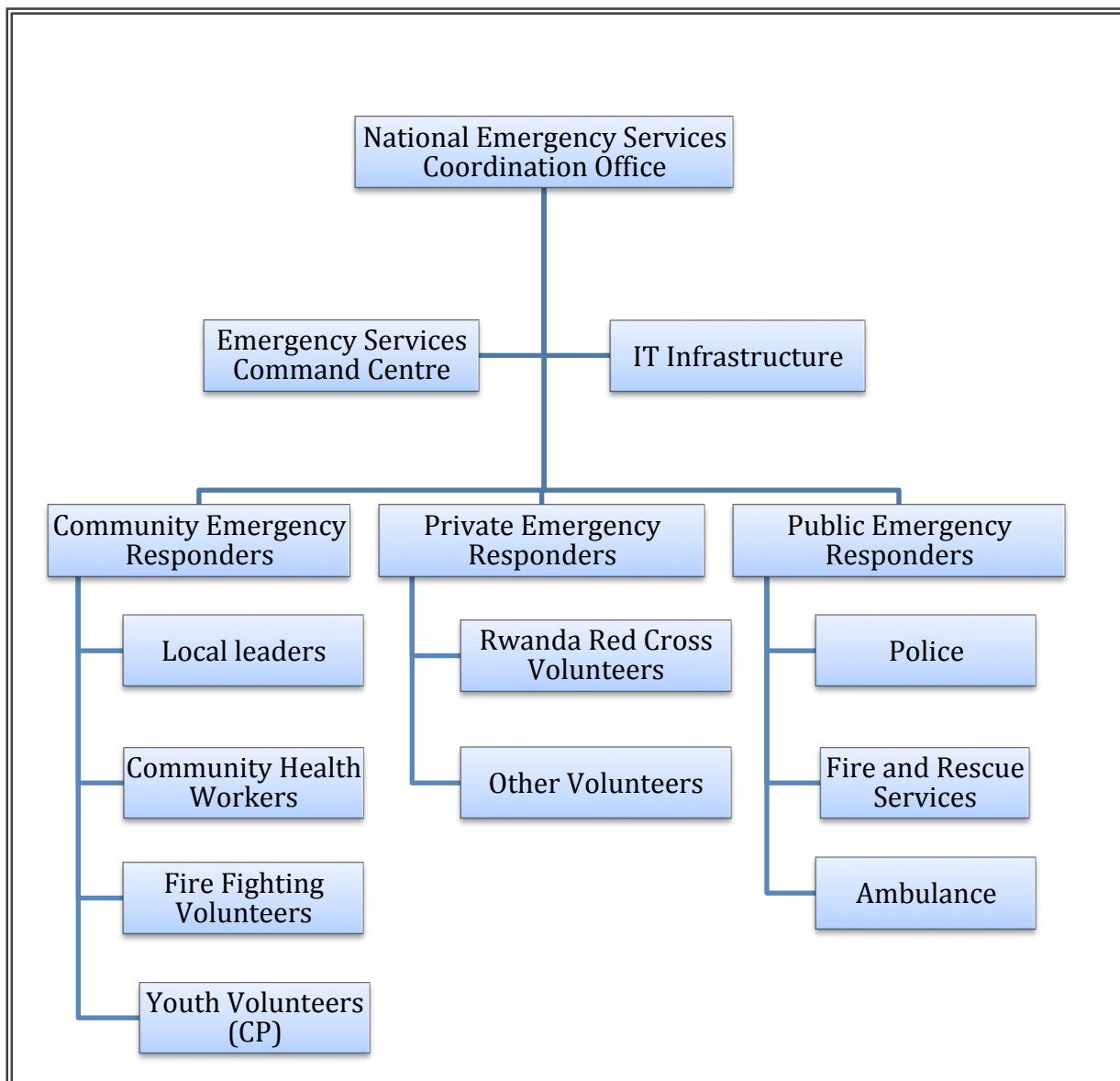
**RWANDA NATIONAL POLICE
IT & CC DEPARTMENT – EMERGENCY RESPONSE
RECEIVED CASE BREAKDOWN**

11 – 12 FEB 19

INCIDENTS/ PROVINCE	Eastern	Kigali City	Northern	Southern	Western	Total
Abortion	0	1	0	0	0	1
Assault	6	4	0	1	2	13
Counterfeit Money	0	2	0	0	0	2
Dead Body Recovered	0	1	0	0	0	1
Defilement	0	0	0	0	1	1
Domestic Viol	0	1	0	0	0	1
Driv.Test Issues	0	1	0	0	0	1
Drug Dealing	0	0	0	0	2	2
Drunkenness	0	2	0	0	0	2
Fire incident	0	1	0	0	0	1
Harassment	0	0	0	1	0	1
Need Help	0	2	0	0	1	3
Rape	0	0	1	0	0	1
Reports	0	1	2	0	1	4
Road Accident	2	5	1	2	0	10
Suicide Attempt	1	0	0	0	0	1
Terrorism	1	0	0	0	0	1
Theft	0	1	0	2	0	3
Total	10	22	4	6	7	49

Annex B: List of Received Cases from 11 – 12 February 2019

Source: RNP Emergency Call Centre



Annex C: Proposed National Emergency Services Coordination Mechanism Structure.

Source: Own contributing idea(2019)

Annex D: Questionnaire on Public Awareness of Emergency Services.

Questionnaire on Public Awareness – Emergency Services

About the survey

The following survey is intended to establish public awareness of emergency response services with regard to the contact numbers (112 and 912) and what to communicate. The survey as well establishes the experience of those who have accessed the services with a view to improving the quality of services offered by the emergency services.

Your participation in this survey is voluntary and your answers will be treated in confidence.

1. What is your gender

- Male
- Female

2. What is your age?
(Tick the age bracket)

- Above 50 Years
- Between 35 – 50 Years
- Between 18 – 35 Years
- Below 18 Years

3. What is your level of education

- Post Graduate
- University
- Secondary School
- Primary School
- No formal education

4. Are you aware of the following public emergency numbers?

- 112
- 912

5. Are you aware of any other number (police/ambulance)

- Yes (continue to item 6)
- No (Thanks for participation)

6. Are you aware of the following toll free numbers?

- 110
- 113
- 116
- 3512
- 3511
- 997

7. Have you ever used any other number in case of an emergency (police/ambulance)?

- Yes
- No

8. Have you ever encountered any emergency?

- Yes
- No

9. If you encountered an emergency, whom did you call?

- Police
- Ambulance
- Friend
- Local leader

10. Have you ever used the police emergency 112?

- Yes
- No

11. If you ever used 112, what was the purpose of call?

- Call for ambulance
- Fire related incident
- Report a maritime incident
- Motor vehicle accident
- Report speeding vehicle
- Report a crime
- Complaint against the police
- Reporting power outage
- Reporting water problems
- Request for exam schedule
- None of the above

12. If you have used 912, what was the purpose of the call?

- Call for ambulance
- Fire related incident
- Report a maritime incident
- Motor vehicle accident
- Report speeding vehicle
- Report a crime
- None of the above

13. If none of the above, specify the purpose of calling the emergency number?

1	
2	
3	

14. Do you consider the above call in item as an emergency?

- Yes, definitely
- Yes, to some extent
- No
- I don't know

15. Are you well aware of what incident to report to the emergency operators?

- Yes, definitely
- Yes, to some extent
- No
- I don't know

16. If you have called using 112/912 for a non-emergency problem, are you aware this can have consequences on other callers?

- Yes, definitely
- Yes, to some extent
- No
- I don't know

17. Did you clearly understand your need for assistance?

- Yes, definitely
- Yes, to some extent
- No
- I don't know

18. If you were not aware that this might have consequences to others, what do you think can be done?

- Only call without due reason
- Know other numbers to call
- Am not aware

19. What was the average time taken to answer calls by police emergency call centre?

- Received within 01 minute
- Received within 02 minutes
- Received within 03 minutes
- Received within 05 minutes
- Received above 05 minutes
- Not received at all

20. How long did the police take to arrive?

- Less than 15 Minutes
- 15 – 30 Minutes
- 30 – 45 Minutes
- 45 – 60 Minutes
- Never turned up

21. What is the average time taken to answer calls by SAMU call center?

- Received within 01 minute
- Received within 02 minutes
- Received within 03 minutes
- Received within 05 minutes
- Received above 05 minutes
- Never received at all

22. How long did the ambulance take to arrive?

- 15 – 30 minutes
- 30 – 40 Minutes
- 45 – 60 Minutes
- Never turned up

23. Did the police call centre operators listen carefully?

- Yes definitely
- Yes, to some extent
- No
- Don't remember

24. Did the police call centre operators treat you politely and with respect?

- Yes definitely
- Yes, to some extent
- No
- Don't remember

25. Did the police call centre operators transfer you to another person for help?

- Yes
- No

26. If they did transfer you, to whom was the call transferred to?

- Police station
- Local Ambulance
- Local hospital
- Local leader

27. Did the police call center operators make a follow-up on the status of your problem?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

28. Did the police give helpful advice?

<input type="checkbox"/>	Yes definitely
<input type="checkbox"/>	Yes, to some extent
<input type="checkbox"/>	No

29. Did the SAMU call center operators listen carefully?

<input type="checkbox"/>	Yes definitely
<input type="checkbox"/>	Yes, to some extent
<input type="checkbox"/>	No

30. Did the SAMU call centre operators treat you politely and with respect?

<input type="checkbox"/>	Yes definitely
<input type="checkbox"/>	Yes, to some extent
<input type="checkbox"/>	No

31. Was the advice given by SAMU operators regarding the medical advice helpful?

<input type="checkbox"/>	Yes definitely
<input type="checkbox"/>	Yes, to some extent
<input type="checkbox"/>	No

32. Did the ambulance operators make a follow-up?

<input type="checkbox"/>	Yes definitely
<input type="checkbox"/>	Yes, to some extent
<input type="checkbox"/>	No
<input type="checkbox"/>	Don't remember

33. Did you to use any of the following means to deliver your message?

<input type="checkbox"/>	Text Message (SMS)
<input type="checkbox"/>	Voice Mail

34. Did the operators ask you your location address?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

35. How easy did the call centre operators identify your location?

<input type="checkbox"/>	Very easily
<input type="checkbox"/>	Easily
<input type="checkbox"/>	Not easily
<input type="checkbox"/>	Not aware

36. How do you direct the responders to your location?

<input type="checkbox"/>	Sector
<input type="checkbox"/>	Cell
<input type="checkbox"/>	Village
<input type="checkbox"/>	Street
<input type="checkbox"/>	House number

37. How easy did the responders reach your location?

- Very easily
- Easily
- Not easily
- Not aware

38. How long did it take the police to arrive?

- Less than 15 Minutes
- 15 – 30 Minutes
- 30 – 45 Minutes
- 45 – 60 Minutes
- Never turned up

39. How long did the ambulance take to arrive?

- Less than 15 Minutes
- 15 – 30 Minutes
- 30 – 45 Minutes
- 45 – 60 Minutes

40. After failure to access services, did the centeroperator’s call back?

- Yes, definitely
- No
- Don’t remember

41. Was the victim asked whether he/she has medical insurance?

- Yes
- No
- Don’t remember

42. Were you satisfied with the quality of service given by police emergency call center operators?

- Very satisfied
- Satisfied
- Not satisfied
- Don’t remember

43. What is your level of trust and confidence in response of police emergency services?

- Very high
- High
- Medium
- Low
- Very Low

44. What is your level of trust and confidence in response of ambulance services?

- High
- Medium
- Low
- Very low

45. What advice can you give to improve the quality of emergency services?

1	
2	
3	

*Thank you once again for providing useful information.
Your contribution counts*

Annex E: Questionnaire on Preparedness of Emergency Services

Questionnaire on Preparedness RNP/MOH

About the survey

The following survey is intended to establish the preparedness of the RNP Emergency Services. The survey attempts to establish what operators base upon when making their decisions, establish how much information operators keep about their clients for future use.

The survey as well establishes the experience of operators during work a view to understanding how they relate with their clients, the challenges faced and any possible existing strategies to address the challenges.

Your participation in this survey is voluntary and your answers will be treated in confidence.

1. What is your gender

- Male
 Female

2. What is your role

- Call Centre Manager
 Call Centre Operator
 IT Support

3. Are you aware of when the call center service established?

- Since 2000
 Before 2000
 Am not aware

4. What kind of calls do you receive in the call Centre?

- Voice
 Video

5. What means do you use to share information with your clients?

- Mobile Telephones
 Land line telephones
 Electronic chat
 Voice Mail
 Text messages (SMS)
 Mobile Apps (Social Media)

6. What is the daily average number of calls received?

- Between 15,000 – 20,000 Calls
 Between 10,000 – 15,000 Calls
 Between 5,000 – 10,000 Calls
 Between 2,000 – 3,000 Calls
 Between 1,000 - 2,000 calls
 Below 1000 Calls

7. What is the daily average number of missed calls?

- Between 15,000 – 20,000 Calls
- Between 10,000 – 15,000 Calls
- Between 5,000 – 10,000 Calls
- Between 2,000 – 3,000 Calls
- Between 1,000 - 2,000 calls
- Below 1000 Calls

8. What is the daily average number of dropped calls?

- Between 15,000 – 20,000 Calls
- Between 10,000 – 15,000 Calls
- Between 5,000 – 10,000 Calls
- Between 2,000 – 3,000 Calls
- Between 1,000 - 2,000 calls
- Below 1000 Calls

9. What is the daily average number of emergency calls?

- Between 15,000 – 20,000 Calls
- Between 10,000 – 15,000 Calls
- Between 5,000 – 10,000 Calls
- Between 2,000 – 3,000 Calls
- Between 1,000 - 2,000 calls
- Below 1000 Calls

10. What is the average number of non-emergency calls?

- Between 15,000 – 20,000 Calls
- Between 10,000 – 15,000 Calls
- Between 5,000 – 10,000 Calls
- Between 2,000 – 3,000 Calls
- Between 1,000 - 2,000 calls
- Below 1000 Calls

11. Do you receive any calls related to the following in your call Centre?

- Fire related incident
- Report a maritime incident
- Motor vehicle accident
- Report a crime
- Lodge a complaint
- Reporting power outage
- Reporting water problems
- Request for exam schedule
- Others

12. Write down other types of calls received in your call centre. (Fill with pen or pencil)

01	
02	
03	
04	

13. What do you base upon when providing safety advice to those seeking for service?

- A list of FAQs
- Knowledge and Experience
- Intuition

14. What types of incidents require dispatching patrol police?

- Robbery
- Burglary
- Escroquerie
- Assaults
- GBV

15. What do you base upon when making a decision to dispatch a uniformed police?

- A list of previous incidents
- Experience
- Policy
- None of the above

16. Do you keep records all of those who call for service?

- Yes
- No

17. Do you make a follow-up to know progress of the case status?

- Yes
- No

18. Are you by policy supposed to make a follow-up on the progress?

- Yes
- No

19. Do you conduct customer satisfaction surveys for your services?

- Yes
- No

20. Do you access any systems to get any of the following information? (Tick if it applies)

- Crime history
- Identification
- Medical insurance
- Home address information

21. Can you name any of your stakeholders during emergency response?

- Ministry of Health
- Rwanda Defense Forces
- MINEMA
- MINALOC
- Others (Go to next question)

22. If others, Please specify

01	
02	
03	

23. How do you collaborate with your stakeholders?

- Telephone
- Radio Walkie-Talkie
- Official correspondence
- Word of mouth
- Meetings

24. Do you have a policy document on call handling standards?

- Yes
- No
- I don't know

25. Have you received any training as a call center operator?

- Yes
- No

26. If the above is true, write down the theme of the training?

01	
02	
03	

27. Do you access any information systems to get support information for your operations?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No
<input type="checkbox"/>	Not aware

28. Do you use any CRM to record call center information?

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No

29. How are you able to locate victims during response?

<input type="checkbox"/>	Using GIS
<input type="checkbox"/>	Using prior knowledge
<input type="checkbox"/>	Street and house number
<input type="checkbox"/>	Constant engagement of the caller

30. What challenges do operators face in the execution of their duties in the call center?

01	
02	
03	

31. What are the strategies in place to deal with the challenges?

01	
02	
03	

Thank you once again for providing useful information. Your contribution counts.